Stromberg-Carlson
Information for Dealer's Service Men
Instruction No. 8. Released Nov. 3, 1927

Use of Antenna Already Installed

Many of the sales of fine radio receivers today are made to people who have formerly owned smaller sets and consequently have an antenna and ground already installed. Too often the Dealer's Installer uses this same antenna and ground system, such as it is, on the new receiver, without even examining it to determine whether or not it is well insulated, of low resistance, parallel or too close to electric light wires, and of the right size to function properly with the new receiver.

For the Nos. 501, 502, 523 and 524 Receivers, a good average length for an antenna is 100 feet. (Including the lead-in wire). This may be increased to 150 feet for greater volume and distance with slightly broader tuning, or reduced to 75 feet for greater selectivity and less "static".

The Nos. 601, 602, 633 and 634 Receivers should have approximately 40 to 75 feet of antenna (including the lead-in wire).

The same length (40 to 75 feet) is recommended for the No. 734 Receiver, or for the No. 744 Receiver, when these receivers are to be antenna operated. (See Instruction No. 11 on "Use of Antenna with No. 744 Receiver").

The antenna and lead-in should all be one piece, if possible. If there are spliced joints, they should be soldered. An indoor attic antenna should be well insulated from rafters. The ground lead should be short and run as directly as possible to a cold water pipe, or to metal buried in earth. (See Instruction Book accompanying receivers for further details on antenna).

When installations are made on the lower floors of apartment buildings and it is found desirable or necessary to erect the antenna on the roof of the building in order to get a good volume of signal pickup in comparison to the volume of pickup of interferences within or near the building, it is well to insert a small condenser of about 0.00025 Mfd. capacity in series with the antenna lead-in wire and the "Ant." binding post of the Receiver. This will reduce the capacity of the antenna system and allow tuning to wave-lengths within the broadcast band to which it might not be possible to tune the antenna circuits with such a long lead-in and without a series condenser.

Many installations on the lower floors of buildings in which elevator motors or other electrical devices are likely to cause disturbances may be improved considerably by so erecting an antenna above the roof where it will be favorably located to pick up radio signals and more removed from the source of disturbance than a loop or a short indoor antenna could be.

Stromberg-Carlson
Information for Dealers' Service Men
Instruction No. 9. Released Nov. 3, 1927.

Improving the Pick-up of the No. 744 Receiver on Loop.

An improvement has been incorporated in the loop of the No. 744 Receivers shipped since November 1, 1927, to obtain a somewhat greater range and sensitivity. These receivers may be identified by the letter "L" in black ink following the code number 744 on the outside of the packing case, it appearing as "No. 744-L".

The No. 744 Receivers already out in the field may be changed so as to approximate the results of this improvement in the manner described below. This is in accordance with our Stromberg-Carlson policy of embodying improvements on receivers in production as soon as they are developed, and of so designing improvements that they may be incorporated, or the same results approximated, in the receivers already shipped from the factory.

The No. 744 Receivers now in the field may be improved in sensitivity and range by removing one turn of wire from the built-in loop as follows:

1. Set the loop control at zero. Remove the staple from the roof of the loop compartment which supports the loop lead wire projecting from the lower of the three insulator rings on the loop spindle and which is spliced to the blue wire of the loop cable.

   Remove the tape and disconnect this lead from the blue wire of the cable.

2. With a small screwdriver, loosen the two staples clamping this lead on the under side of the top member of the loop frame. Pull the wire through these staples until you have enough slack to remove the forward turn (one complete turn nearest the front of the cabinet) from the loop frame.

3. Now, pull on the lead until the wire remaining on the wood frame is taut (i.e., the lead wire should now be increased by the length of the one turn which was removed from the loop frame). Now, hammer tight the two staples on the loose end, clamping this end of the loop coil wire to the frame. Cut off the surplus length of wire so that the lead will be approximately the same length that it was formerly. Resplice to the blue wire of the loop cable, solder and tape the connection and replace the staple supporting this cable wire to the roof of the loop compartment.

4. It may now be necessary to realize the variable condenser in the first tuned radio frequency stage in order to compensate for this change. To do this, remove the small caps from the front left-hand hole in the top of the shield, and, with the receiver tuned to a station on a wavelength above "80" on the dial and the Volume Control turned down for small volume, insert a screwdriver in this hole and tune the condenser for maximum signal with the adjusting screw found there.

Stromberg-Carlson
Information for Dealers' Service Men
Instruction No. 10. Released Nov. 3, 1927

Improving the Pick-up of the No. 734 Receiver on Loop

An improvement for increased sensitivity has been incorporated in the No. 102 Envelope Loops, for use with the No. 734 Receivers, which were shipped on or after November 1, 1927. These improved loops can be identified by the letter "L" following the code number, the new loops being marked on the packing cases "No. 102-L Loop".

It must be remembered that the No. 734 is strictly an antenna type receiver, and that this No. 102 type loop is an optional arrangement of signal collector, for use solely where it is not possible to install a wire type antenna. The loop, however, will allow for excellent service on local stations, which meets a definite requirement in our largest cities, where distance is not necessary or desirable.

The range and sensitivity of the No. 734 Receivers employing the No. 102 Loops, which are already in the field, may be improved by removing one turn of wire from the ground side of the loop. This may be accomplished in the following manner:

1. Remove the flathead screw and metal disc which lock the loop spindle into the socket for this spindle in the upper loop bracket. (It is not necessary to remove the loop supporting brackets from the cabinet to make this change). Disconnect the loop cable from the chassis binding posts.

2. Spring the top loop bracket upward until it comes free of the upper loop spindle.

3. Raise the loop, drawing the loop cable out of the opening in the lower loop bracket.

4. Remove the flat head wood screw at each end of the bottom of the loop envelope cabinet.

5. Draw the loop out of the envelope.

6. Disconnect the taped and soldered splice between the black wire of the loop cable and one of the loop leads.

7. Loosen staples and draw enough of this loop lead through these staples to give you enough slack to remove one turn from the loop frame.

8. Pull on the loose end of wire, drawing the slack wire caused by removal of the one turn, through the staples until the turns remaining on the loop frame are tight. The loose staples should be driven into the wood to hold the loop winding in this tightened condition.

9. Cut off the wire, leaving a lead of approximately the same length as you had formerly. Splice this lead to the black wire of the loop cable, solder and tape the connection, reassemble the loop and remount in brackets.

Stromberg-Carlson
Information for Dealers' Service Men
Instruction No. 11. Released Nov. 3, 1927.

Use of Antenna with the No. 744 Receiver.

There are several conditions under which it may prove advantageous to couple an antenna to the built-in loop of the No. 744 Receiver.

When one of these receivers is installed in a home or apartment building with walls of metal lath construction and possibly metal in the ceilings, the loop is so shielded from radio signals that it would prove decidedly advantageous to use some sort of antenna erected outside of the shield. In other installations, if there are elevator motors, X-ray machines or other interfering electrical devices located within the same building as the loop-operated receiver, an outside antenna run in a direction away from the disturbance will pick up the original broadcast from radio stations in a greater proportion to the pickup of the disturbing interference than could a loop located inside the building. An outdoor or even a good indoor antenna (if unshielded) coupled to the loop will, moreover, permit a greater pickup of signals from distant stations and will simplify operation of the receiver by making it unnecessary to adjust the loop control for rotation of the loop.

A coil of the proper characteristics for coupling an antenna to the loop of the No. 744 Receiver has been developed in the Laboratory. These coils were supplied as standard equipment with No. 744 Receivers shipped as of November 8, 1927 and they may be utilized, or not, at the will of your customer.

This makes of the No. 744 Receiver a loop-operated instrument with the optional use of an antenna, if desired; as compared to the No. 734 Receiver, which is designed primarily to use an antenna, but may, if necessary, operate on a loop. The No. 744 receivers already in the field, can be arranged for antenna operation by installing a P-17704 Antenna Coupling Coil, as follows:

Open the front door of the loop compartment and drop the lower rear hinged panel of the cabinet. Bring the antenna and ground wires into the cabinet through a hold already drilled in the left-hand rear corner of the floor of the loop compartment. Set the loop at zero. Pass the coupling coil into the loop compartment through the opening at the rear. Insert that end of the coil frame which supports the binding posts first, so that that end will be down when the coil is erect; and the side of the coil frame to which the ground-connecting wire is tacked must be nearest the end of the cabinet. Connect the antenna and ground wires to the binding posts on the coupling coil. Be sure that these wires are not reversed. The binding posts are marked "Ant" and "Gnd", and furthermore, the ground-connecting wire (tacked to the side of the coil frame) is soldered to the lug under the

ground post. Attach the coupling coil in an upright position to the rear wall of the loop compartment by means of the three wood screws provided. Now pull the Receiver chassis forward out of the cabinet far enough to make the loop binding posts accessible. Carry the ground connecting wire upward from the loop compartment into the Receiver chassis compartment through the open space just inside the end of the cabinet. Connect it to the "GND" binding post of the Receiver chassis. (There are already two wires connected to this post, and this will make a third). Push the chassis back into the cabinet. Now pull the excess of antenna and ground wire outside of the cabinet, so that the leads inside will be short, direct, and taut. Close the rear hinged panel and the door of the loop compartment.

When coupled to an antenna, the directional characteristics in operation of the loop are changed so that maximum volume will always be obtained when the loop is parallel to the coupling coil. The loop may be left permanently in this position (Loop Control at 0^{o}, 180^{o}, or 360^{o}) if desired, and volume controlled by the regular volume control on the Receiver chassis; or the volume may be controlled by rotation of the loop.

Even when an antenna is coupled to the Receiver, it is well to change the loop to conform with the improvement described in Dealers' Service Instruction No. 9: "Improving the Pickup of the No. 744 Receiver on Loop".

The antenna to use with this loop can be any length found necessary for an efficient signal collector for the particular location, ranging from 30 to 75 feet, including lead-in wire. Use an outside antenna, if possible, well insulated from trees and buildings. Run the ground wire as shortly and directly as possible to a cold water pipe or to metal (such as a six foot length of one inch galvanized iron pipe) buried in moist earth.

These P-17704 Antenna Coupling Coils will be supplied to authorized dealers free of charge, for the No. 744 Receivers already in the field. Requests for this apparatus should be addressed to the Stromberg-Carlson Telephone Manufacturing Co., 1060 University Avenue, Rochester, New York. Orders for this P-17704 Antenna Coupling Coils must give the serial number of the particular No. 744 Receiver for which it is required.

Stromberg-Carlson

Information for Dealers' Service Men

Instruction No. 12. Released Nov. 5, 1927

Maintaining Good Contacts in the Filament Circuit

We suggest that dealers' service men carry with them a small strip of sandpaper of "00" grade, or finer, to clean the contact surface of rheostat wipers and the resistance wire, as well as push pins on tube bases. Rheostat wipers should also be examined to make certain that they maintain enough bearing pressure on the resistance wire to insure good contact. It frequently happens that the blame for fluctuations in filament voltage is laid to defective Tungar bulbs or violent fluctuations in line voltage, when the trouble really comes from poor or high resistance contacts in the filament circuit.

The wire on the rheostats used in Stromberg-Carlson Receivers is made of a nickel and steel alloy which should not corrode, but the wire may become dirty, and it must be remembered that only a little dirt or tarnish on the resistance wire, or only a little looseness in the tension of the contact arm, may result in noisy reception and fluctuations in filament voltage. This is particularly true with the Nos. 501, 502, 523, 524, 601, 602, 633 and 634 models, where the Voltage Control Rheostat must carry a current of from 1 to 1-3/4 amperes. These fluctions in filament voltage may occur from poor contacts in the Volume Control or Voltage Control Rheostats, even while the rheostats are not being touched by the operator.

Stromberg-Carlson
Information for Dealer's Service Men
Instruction No. 13. Released Nov. 8, 1927.

Replacing UX-216-B (CX-316-B) Tubes

It is recommended that Dealers keep a stock of Stromberg-Carlson-tested UX-216-B tubes on hand for the purposes of replacements in #404 Socket-Power Units, because if one of the two tubes of this type employed in the unit proves defective after only a few hundred hours or less of service, it will not then be necessary to replace both tubes if you have on hand to replace the defective tube one of these UX-216-B tubes which has been tested by Stromberg-Carlson for uniform operating characteristics in #404 Socket-Power Units.

Replacements can be made in emergencies from other UX-216-B or CX-316-B tubes which you have in stock or can obtain from your jobber, but since the tubes obtained at random on the market do not necessarily conform to Stromberg-Carlson's rigid inspection standards, they may not deliver like voltages and, therefore, may not match each other or match the tubes tested and sold by Stromberg-Carlson; a situation which might give rise to an AC hum in the Receiver. The UX-281 or CX-381 type rectifier tube may also be used to replace the UX-216-B or CX-316-B tubes in this #404 Socket-Power Unit, but here, too, it will be necessary to replace both tubes. Do not attempt to use a combination of one UX-216-B (CX-316-B) tube with one UX-281 (CX-381), because these tubes will deliver unlike voltages under certain conditions of load.

STROMBERG-CARLSON TELEPHONE MFG. CO.
INFORMATION FOR DEALERS' SERVICE MEN
Instruction No. 14, Released 11/8/27.

Use of the UX-201-A or CX-301-A Tube as a Detector

If your customer is not a fan for distance and if he objects to the hiss of the UX-200-A(CX-300-A) type detector tube, a general purpose UX-201-A (CX-301-A) tube may be substituted for it. Its use will

1. Reduce "tube noise" and roar
2. Do away with the 3-minute warming-up period required by the alkali vapor detector tube.
3. Does not effect A.C. hum

A few dealers, having observed that AC ripple is so thoroughly suppressed in a properly installed and adjusted Stromberg-Carlson AC Receiver that practically all hum is masked by the hiss of the 200-A type detector tube, have questioned as to whether the substitution of the quieter operating 201-A type tube would cause objectionable hum. In practice, the hum balance can be maintained just as well with either type of detector tube.

In any AC type receiver, the greater amount of hum comes from the detector tube. Very little hum is carried to the loud speaker from the radio and audio frequency amplifier stages. Since, then, it is the detector stage that is most susceptible to hum in any kind of AC radio receiver, it must be obvious that a sensitive detector tube will pick up more hum than a less sensitive one. Now it is a well-known fact that a 201-A type tube is less sensitive as a detector than the special super-sensitive 200-A type. Moreover, the voltage amplification of the signal within the detector tube itself is greater in the 200-A, or we say that it has a "higher Mu" than the 201-A tube. To get the same volume of signal when using the 201-A as a detector, you have to rely less on your detector and use more radio-frequency amplification. Therefore, the less sensitive detector has reduced both the hum and the signal, and turning up the Volume Control (turning on more radio-frequency amplification) brings up the signal again but without the hum.

Incidentally, your customer will enjoy his Stromberg-Carlson AC Receiver more if you explain to him these things:

1. <u>To a detector, good audio system, and sensitive cone speaker, an AC hum is a bass note.</u>

   To the listener, an AC hum is an annoyance, something to be eliminated, or at least suppressed to the point where it is not objectionable and cannot interfere with the weakest signal. But to the Receiver it is a <u>signal</u> picked up by the detector, which must be amplified tremendously and then transformed from electrical energy into sound waves, the same as any other bass note.

2. We COULD eliminate or suppress the AC hum by eliminating or suppressing the bass notes.

This is the cheap way, the easy way of building an AC receiver. It is very common today, commercially. And it is very bad. It is bad for two reasons, as follows:

(a) Radio manufacturers cannot eliminate just one bass note. They cannot pick out the one note at the frequency of the undesired hum and say "Here, we will throw this one away but keep all the others." That is commercially impracticable. They have to suppress the hum note and all the notes below it; and usually a number of notes above as well. This they can do by using a loud speaker which will not respond to bass notes, or by using an audio system which will not pass bass notes; but it is cheaper to use both.

(b) The hum-note is only about one octave below middle "C". Notice where middle "C" comes on your piano. Physicists say that that note is at 256 cycles. Now the "C" an octave below is at half that many, or 128 cycles. Curiously enough, the hum in an AC receiver is mostly a note at 120 cycles, even though the receiver is operating on a 60 cycle electric lighting system. There may be some hum of a 60 cycle note, and some of 240 and 480, but the greater portion will ordinarily be at the "second harmonic," or 120 cycles, only a little more than one octave below middle "C"! All the bass notes below that have to be sacrificed if you are going to allow the AC ripple to be picked up by the detector and then suppressed in the audio system or loud speaker.

Of course, low notes are apparently heard on receivers of this type, but they are not music. The fundamental frequency of the note is lacking. What you really hear are harmonics known as overtones, one or more octaves high. Our Acoustical Engineers say that a combination of these overtones can produce the illusion of pitch, but that if the fundamental is lacking, the note must be thin, unnatural, and unpleasant.

3. The Stromberg-Carlson method is to eliminate AC ripple before it can be picked up by the detector. If you can filter out AC ripple before it can get in to your audio system, then there can be no hum, and hence it will not be necessary to impair the audio quality of bass notes in any attempt to eliminate hum. This, then, is the goal toward which Stromberg-Carlson engineers have been striving: to eliminate ripple before it could reach the tubes, keep the supply lines clear and thereby make possible the elimination of AC hum and the retention of full, rounded bass notes at their fundamental frequencies.

4. Stromberg-Carlson not only electrified its receivers but improved the quality on bass notes.

Refinements in the audio system, the development of a remarkable cone speaker, and the application of high plate voltages to power tubes have brought about an improvement in the audio-quality of Stromberg-Carlson Receivers for notes in the lower register. This was made possible in spite of the "electrification" of these receivers to operate from the light socket by the suppression of AC ripple before it could reach the receiver tubes. Of course some hum must always remain, because we are not willing to sacrifice low-note quality to reduce the small volume of hum yet unsuppressed. We have suppressed AC ripple to such an extent that the slight hum remaining is almost imperceptible and should not modulate the weakest signal. Further suppression would be commercially impracticable.

Stromberg-Carlson
Information for Dealer's Service Men
Instruction No. 15. Released Nov. 8, 1927.

Adjusting Lid Checks of the No.744 Cabinet

A special wrench is supplied with each No. 744 Combination Instrument to adjust the tension of the springs in the spring checks which support the covers to the compartments for the phonograph and for loose records. The method of adjustment is very simple. Fit the adjusting wrench around the circumference of the round box containing the coiled spring of the check mechanism, with the opening in the curve of the wrench over the spring adjustment lug located at the rear and below the center of this round box. Now loosen the large set screw on the side of the round box, holding the wrench tightly as you do so, so that the lug will not snap away due to the spring tension when no longer clamped by the set screw. Adjust the lug with the wrench for the spring tension desired to check the cabinet lid properly, and tighten the set screw.

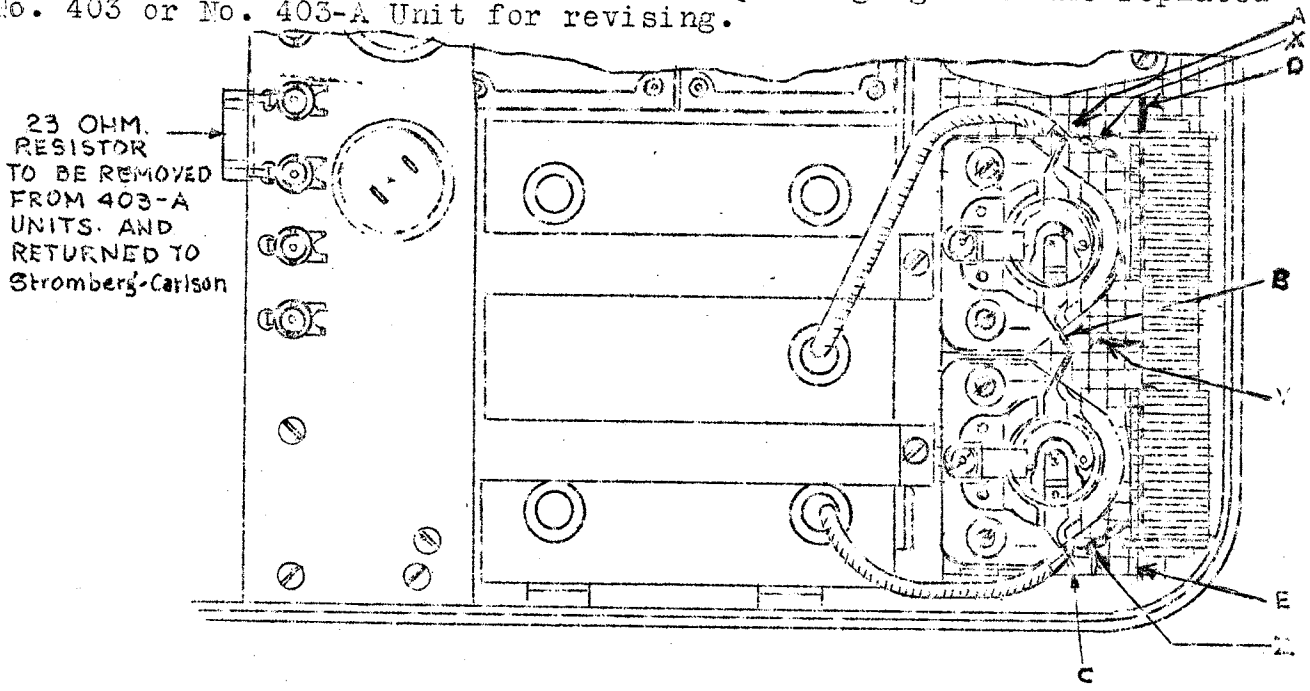
STROMBERG-CARLSON
INFORMATION FOR DEALERS' SERVICE MEN
INSTRUCTION NO. 16 - RELEASED NOV. 25, 1927.

EQUALIZER COILS FOR NO. 403 AND 403-A AUDIO POWER UNITS

The No. 403 Type of Audio Power Unit has been improved to give more uniform action and longer life of the Tungar rectifying bulbs with greater line circuit voltage variations. This improved outfit is known as the No. 403-AA Audio Power Unit.

The same improvements can be incorporated in No. 403 and No. 403-A Audio Power Units, now in the field, by installing a P-17722 Equalizer Coil.

Installation: Tools required are a soldering iron, screw driver, long-nose pliers. Whenever possible, perform installation of Equalizer in your store and deliver an improved No. 403 Unit to your customer in good working condition, bringing back the replaced No. 403 or No. 403-A Unit for revising.



Operations:

1. Remove screws (ten) around base of No. 403 Unit. Remove outer casing of unit, springing front side forward to clear loud speaker jack.
2. Unsolder heavy wire from Tungar Socket Terminal A and solder to outside terminal D of Equalizer Coil. Unsolder other heavy wire from other Tungar Socket Terminal C and solder to other outside terminal E of Equalizer Coil. Do not let these wires get reversed in position, as that will lower output voltage.
3. Hold Equalizer Coil tightly against porcelain Tungar sockets in position shown and solder middle coil wire Y to mid-terminal B of Tungar Sockets. Solder coil wire X to outside Tungar Socket Terminal A, and coil wire Z to outside Tungar Socket Terminal C.
4. Replace outer casing of No. 403 Unit. Be sure that wire E does not ground on metal casing.
5. Unsolder and remove 23-ohm resistor (on No. 403-A Unit only) and return to Stromberg-Carlson factory.

STROMBERG-CARLSON

INFORMATION FOR DEALERS' SERVICE MEN

INSTRUCTION NO. 17 RELEASED 12/20/27

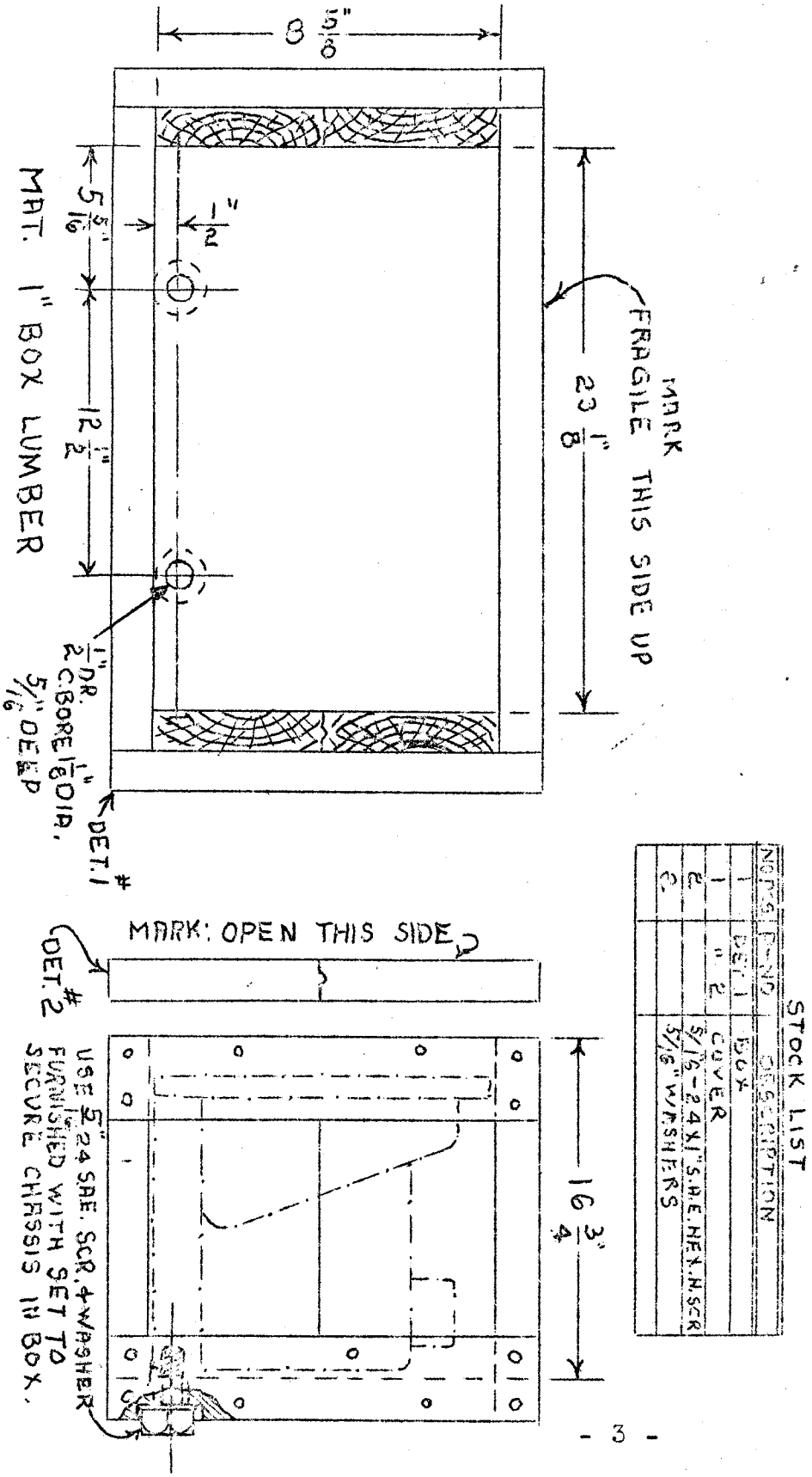
Method of Packing Nos. 500 and 600 Type Chassis for Shipment to Branch Stocks for Conversion into Nos. 520 and 630 Type Chassis

In accordance with our letter of December 30, 1927 describing the plan by which the Nos. 501-A, 502-A, 601-B and 602-B Receivers may be converted into Nos. 523, 524, 633 and 634 Type Receivers, two sketches are given on the sheets attached, showing the correct method of packing these chassis for shipment. These sketches should be followed as closely as possible to insure safe shipment and avoid costly claims for damages with the transportation companies.

STROMBERG-CARLSON

INFORMATION FOR DEALERS' SERVICE MEN

INSTRUCTION NO. 17 - PACKING BOX FOR 600 TYPE CHASSIS



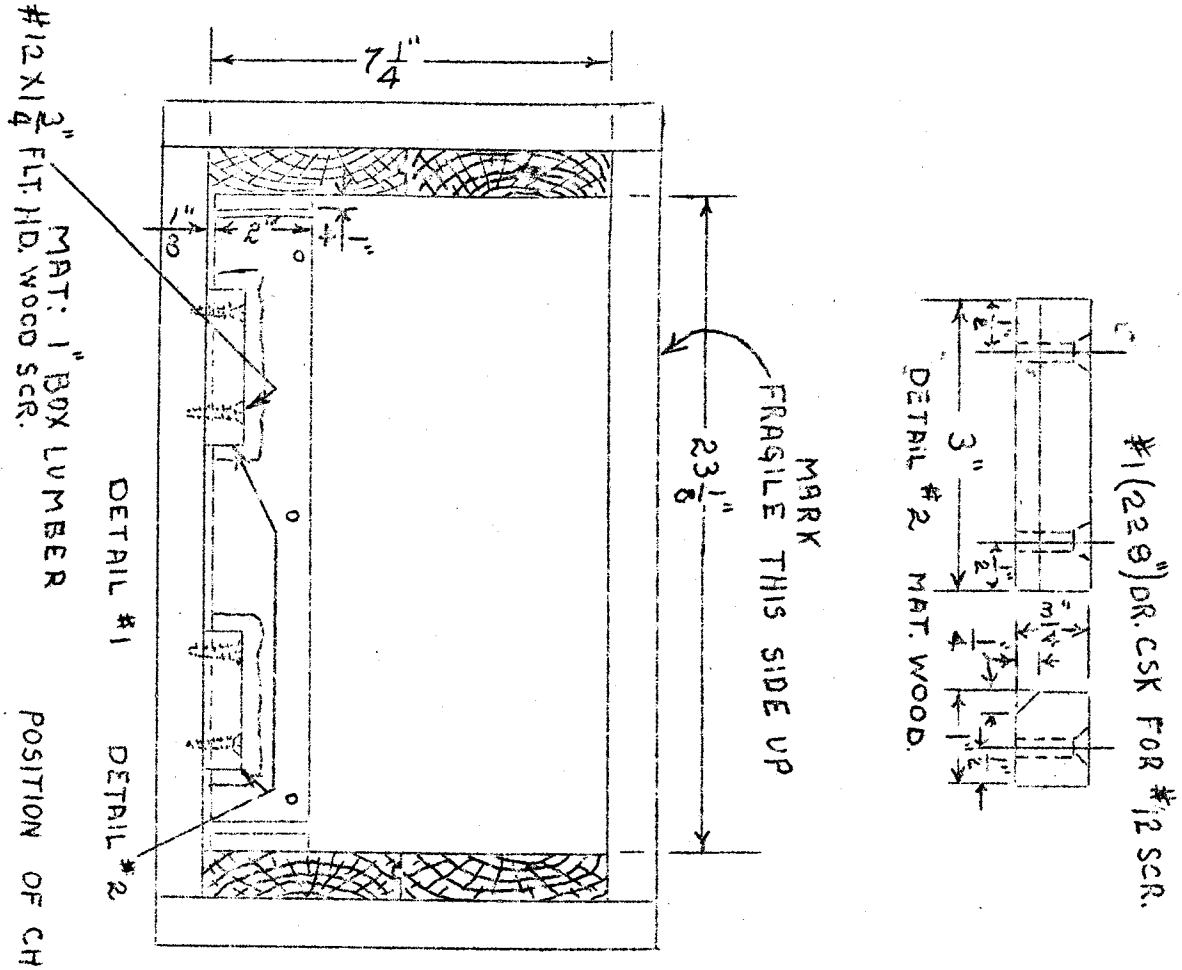
STOCK LIST

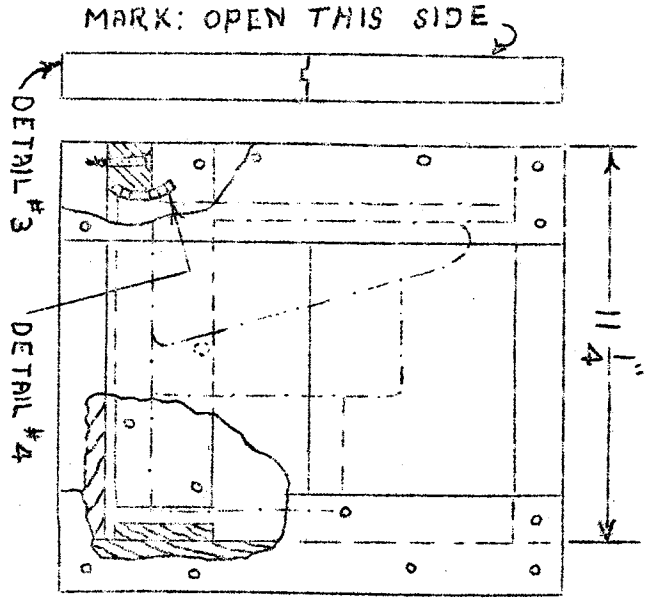
NO. REQ'D	DET. NO.	DESCRIPTION
1	1	BOX
2	2	COVER
6		5/16-24 X 1" S.A.E. HEX. H. SCR. 5/16" WASHERS

STROMBERG-CARLSON

INFORMATION FOR DEALERS' SERVICE MEN

INSTRUCTION NO. 17-PACKING BOX FOR 500 TYPE CHASSIS





STOCK LIST

NO. PCS	P-NO.	DESCRIPTION
1	DET. #1	BOX
2	" 2	WEDGE
1	" 3	COVER
2	" 4	PAPER WOOL
4		1 3/4" #12 FL. HD. WOOD SCR.

+ FURNISH LOOSE

POSITION OF CHASSIS SHOWN THUS ——·——·——

Stromberg-Carlson
Information for Dealers' Service Men
Instruction No. 18 Released 12/20/27.

Drilling No. 502 and No. 602 Receiver Cabinets for Conversion to No. 524 and No. 634 Type.

You have already been notified that the chassis of all No. 502 and No. 602 Receivers which you have on hand can be converted at a nominal charge into No. 524 and No. 634 models chassis.

In connection with this conversion, it is also necessary to drill the console cabinets of the DC type Receivers with sufficient holes of sufficient size to provide adequate ventilation for any type of power supply equipment that may be used with the new Receiver. It is not enough to trust that a No. 403 Audio-Power Unit will never be purchased by the customer if Universally Powered equipment is installed at the moment. Failure to provide adequate ventilation when converting No. 502 and No.602 Receivers into No. 524 and No. 634 models may result in serious difficulty at some future date due to overheating, and Stromberg-Carlson assumes no responsibility for Receivers not fully converted to the new type.

The accompanying diagrams illustrate the standard pattern of drilling ventilation holes in the rear panel of the cabinet and in the floor of the compartment for power supply equipment. The pattern need not be strictly adhered to, however, if drills of the proper size are not available. The purpose is to ventilate, and this may be done effectively by holes of your own pattern if you remember these precautions:

1. Drill holes in the rear panel close to the top of the cabinet so that warm air will not be pocketed under the roof of the cabinet.

2. Drill holes directly under the position to be occupied by the bulbs and tubes in a No. 403 Audio-Power Unit, so that air may flow up through the skeleton base and around the bulbs in the unit. A "right angle" attachment for a brace and bit is required for this. Cabinet makers have these, or they may be obtained at small cost from hardware stores. The "Sillbore" and"Miller's Falls" brands are recommended.

3. It takes many small holes to replace one large hole, due to friction of the air on the sides of the hole.

4. Preserve the symmetry of the cabinet. Remove the rear panel and lay out the center points of your holes with ruler and pencil. Do not drill at random. Drill as many holes on the left-hand side as you do on the right, and locate them symmetrically.

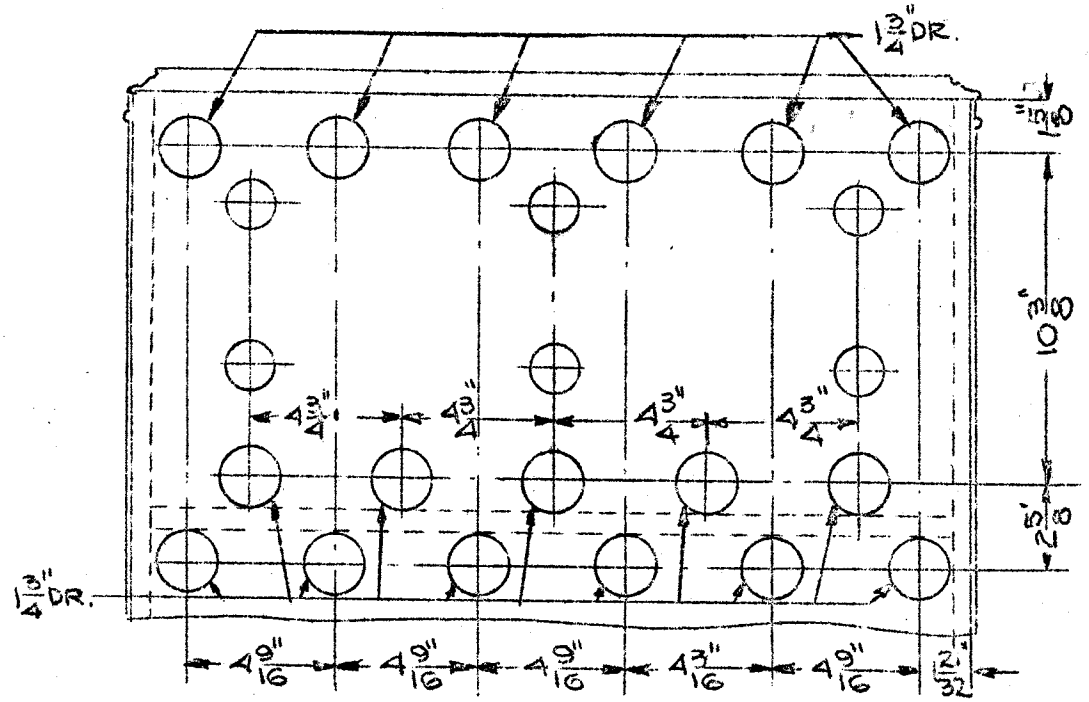
When the cabinet is drilled, stain the holes with Burnt Umber, which may be obtained in powder form from any store dealing in paint supplies, and may be applied by mixing with a little water. Stains containing alcohol, spirits, or turpentine may be used, but in this

case the excess solvent must be wiped off and the stain rubbed dry within a minute of the time of application. If this is not done, the excess spirits will spoil the finish of the cabinet.

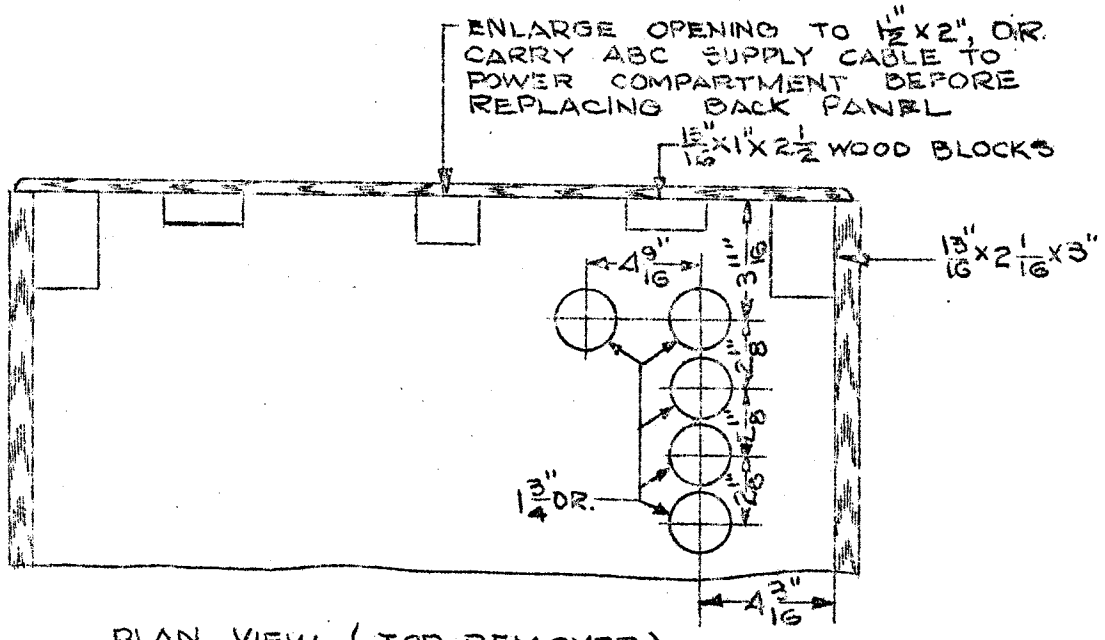
The standard No. 524 and No. 634 Cabinets as shipped from the factory are provided with blocks for centering the No. 403 Audio-Power Unit, when used, but it is not necessary to install these in cabinets converted in the field from the No. 502 or No. 602 type. Be careful, however, when installing a No. 403 Audio-Power Unit, to locate it centrally in regard to the long side of the cabinet, and about an inch and a half forward of the rear wall of the cabinet. Air can circulate freely around all four sides of a unit so positioned.

Stromberg-Carlson
Information for Dealers' Service Men
Instruction No. 18 Released 12/20/27.

Standard Pattern for Converting No. 502 Cabinet to No. 524 Type.



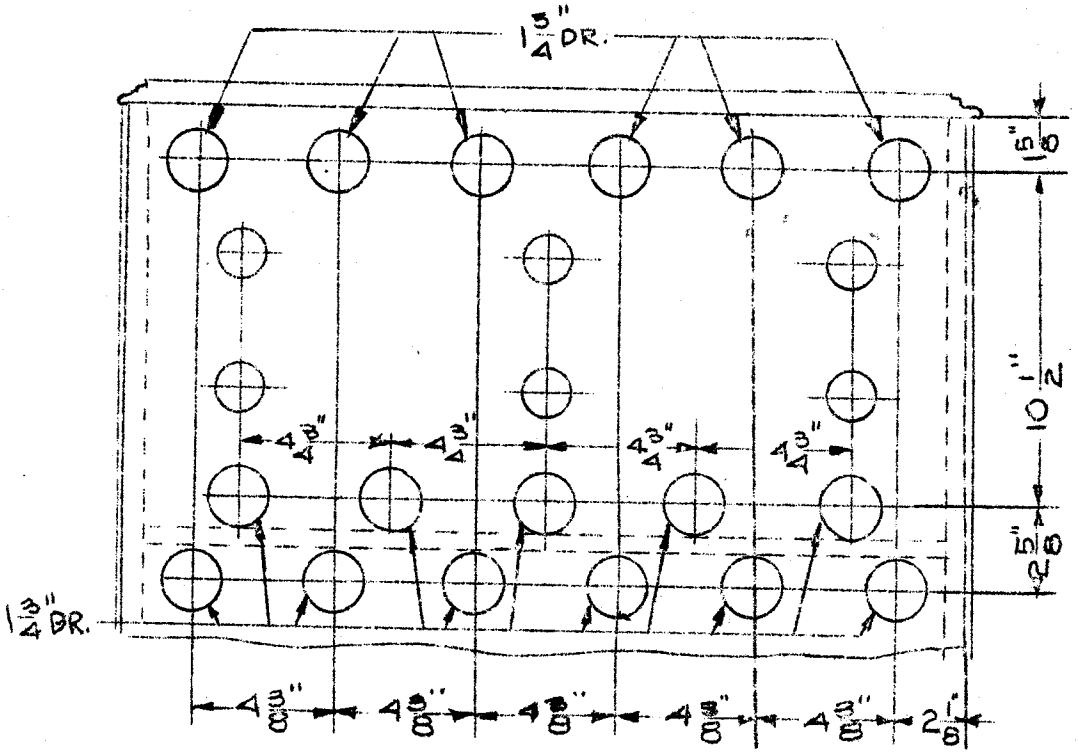
REAR VIEW OF CABINET



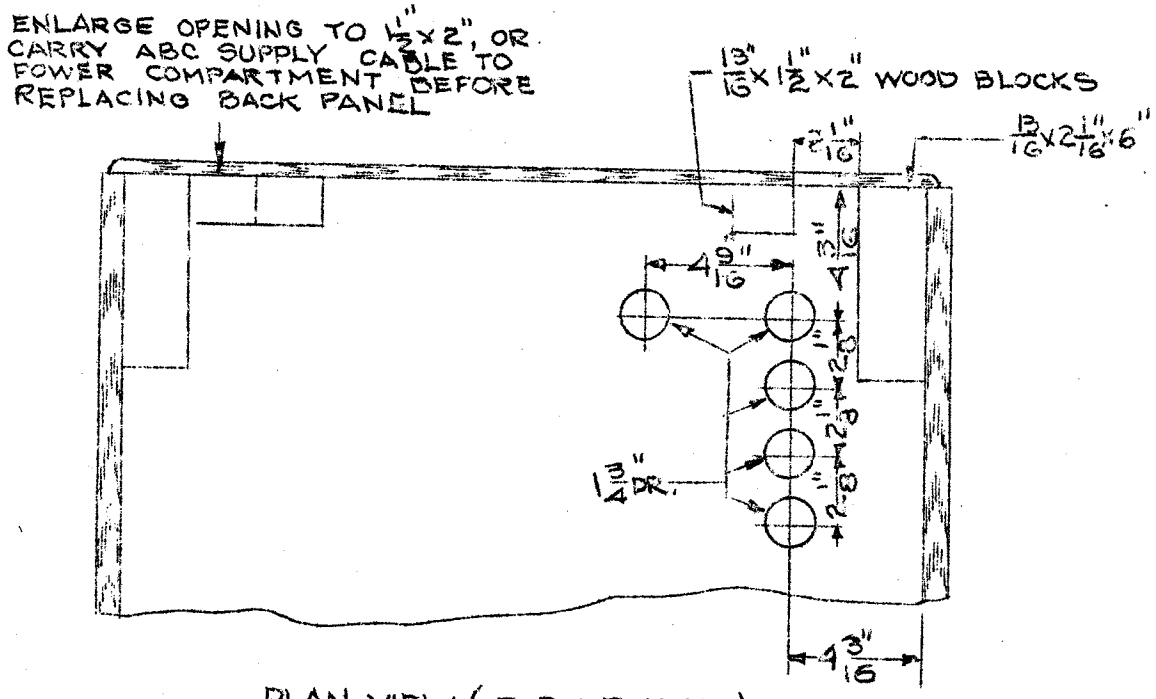
PLAN VIEW (TOP REMOVED)

Stromberg-Carlson
Information for Dealers' Service Men
Instruction No. 18 Released 12/20/27.

Standard Pattern for Converting No. 602 Cabinet to No. 634 Type.



REAR VIEW OF CABINET

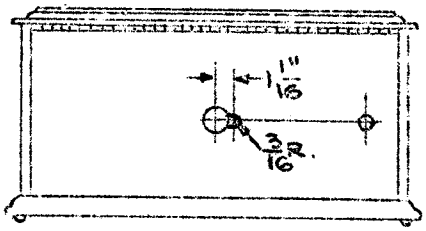


PLAN VIEW (TOP REMOVED)

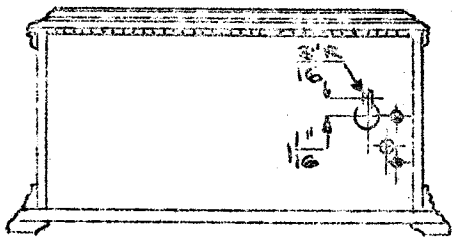
STROMBERG-CARLSON
INFORMATION FOR DEALERS' SERVICE MEN
INSTRUCTION NO. 19 RELEASED 12/20/27.

CONVERTING NOS. 501 AND 601 TO NOS. 523 AND 633 CABINETS

The only change in the cabinet necessary when converting the No. 501 or No. 601 type Receivers to Nos. 523 or 633 models is to slot one side of the hole in the back of the cabinet through which the A-B-C supply cord passes. The slot is required in order to allow the terminal shoe on the A-B-C supply cord to be drawn in or out of the cabinet.



REAR VIEW OF #523 CAB.



REAR VIEW OF #633 CAB.

As shown in these diagrams, the slot should be at the top of the hole already drilled in a No. 601 Cabinet, and at the right (as you face the back) of the hole in a No. 501 Cabinet.

To form the slot, drill a 3/8 inch hole with its center 1-1/16 inch from the center (5/16 inch from the near edge) of the large hole already drilled in the back of the cabinet. Cut the sides of the slot with a key-hole saw, and touch up the slot with a little mahogany stain. If the stain contains alcohol, spirits or turpentine, wipe off the excess stain and rub dry before it has been standing more than one minute. If this precaution is not taken, the excess of alcohol, spirits or turpentine may spoil the finish of the cabinet around the slot.

Attached you will find two pages showing the standard pattern for converting No. 51 Radio Cabinet Tables to No. 51-V type, and No. 61 Tables to No. 61-V Type.

HOW TO INSTALL A STROMBERG-CARLSON NO. 2 VOLTAGE COMPENSATOR

The Stromberg-Carlson No. 2 Voltage Compensator has been developed to enable the Stromberg-Carlson No. 734 and No. 744 A.C. Type Radio Receivers to operate satisfactorily in locations supplied with 60 cycle, 100-130 Volt, alternating current which is subject to fluctuations in line voltage. It should not be used with any other makes or types of radio receivers.

This compensator should be connected directly to the Stromberg-Carlson No. 404 Power Units which are equipped with Pc. 17778 Equalizer and the 291-AA Relay which, if not already equipped, should be installed before installing the compensator. The Equalizer is a coil of wire about 4-1/2 inches long and with a small diameter, which is located directly under the Tungar Tube Sockets. The relay is placed directly over the terminals in the rear of the No. 404 Unit.

TO INSTALL THE NO. 2 COMPENSATOR.

Remove the plug from either end of the twisted pair cord which formerly connected the socket-power unit to the house lighting circuit, and draw this cord completely out of the receiver cabinet. Then replace the plug on it. Place the No. 2 Voltage Compensator Unit behind or at either end of the receiver cabinet, and connect the three-conductor cord from this unit to the No. 404 Socket-Power Unit by inserting the male and female plugs on the end of this cord into their respective outlets, with that side of each plug uppermost which is marked "Top". The voltage compensator should be located so as to be as inconspicuous as possible and still receive adequate ventilation from circulating air and be within convenient distance of the receiver for connecting with the cords provided. The other cord projecting out of the top of the No. 2 Voltage Compensator Unit is a two conductor cord with female plug attached for connection to the pilot lamp, phonograph motor, and reading lamp outlet of the No. 744 Receiver, or for connection to a reading lamp used as a pilot lamp, when desired, with the No. 734 model.

Now connect the A.C. Supply Cord which you drew out of the receiver cabinet, to a light socket or outlet and plug the female plug on the other end of this cord into the outlet at the top of the No. 2 Compensator Unit. The cords from the No. 2 Voltage Compensators can be brought into the No. 744 Receiver through the ventilation hole in the back. The three-conductor cord with two plugs can be passed through the hole by placing the pins of the male plug around the cord just back of the female plug. The three-conductor cord may be run through one of the ventilating holes in the back of the No. 734 Receiver although it is necessary to remove the back to insert the two plugs in the power unit,

or to insert the plugs with the power unit drawn forward, part way out of the cabinet.

The No. 2 Voltage Compensator is now connected to the Socket-Power Unit in such a way as to supply a practically constant potential to the No. 404 Socket-Power Unit whenever the receiver is turned on, and the voltage compensator is disconnected from the lighting circuit by throwing the ON-OFF switch on the receiver panel to the off position.

Now snap the toggle switch on the top of the voltage compensator unit to the position marked "HI" if your line voltage is normally above 115 volts. Set this switch at "LO" if the line voltage is normally below 115 volts. Information regarding the normal line voltage of your lighting circuit can be obtained by telephoning your local light and power company. The "HI" position of this switch will give the lower reading on the milliammeter on the receiver panel.

It will be necessary to adjust the meter adjuster knob so that the needle is never beyond the red mark on the meter scale when the receiver is "warmed up" and with the Volume Control in any position. This is best done after the receiver has been in continuous operation several minutes. The meter pointer will not come up to the red mark immediately when the receiver - if cold - is turned on, even when using a Voltage Compensator, but will rise slightly during the warming-up period. Rotate the Volume Control knob through its entire range of volume to observe at what point the meter reads highest. With the Volume Control in this position, adjust the Meter Adjuster so that the needle does not pass the red mark on the meter scale. The Meter Adjuster should then require readjustment only at long intervals, but it is best to observe the meter reading now and then to make sure that the vacuum tubes are not being over-voltaged.

There are no acids, liquids, bulbs or moving parts in this voltage compensator; nothing which should require future adjustment, replacement or attention. There are one or two minor difficulties which may be encountered when it is first installed, however. If the Tungar bulbs used in the unit to which this compensator is connected have grown fairly old in service before the compensator is installed, they may flash with a blue or green flame. This condition is generally only temporary with such bulbs and, if, after running the set for some time, this condition is not cleared up, it would be wise to replace the tubes.

The core laminations in the voltage compensator unit may vibrate and produce a noticeable mechanical hum when the compensator is first installed. This hum will be very materially reduced if the compensator is allowed to warm up by continuous operation for two or three hours, and after a day or two, this hum will be reduced to a minimum.

INSTALLING RELAY ON NO. 404 POWER PLANT
Jan. 9, 1928

These instructions cover the installation of "slow acting" relay in the No. 404 Power Plant to allow the filaments of the tungar bulbs to become heated before the plate voltage is applied to these two bulbs.

The relay winding is connected in the power plant "B" supply circuit in place of resistor "R-3" (976 ohms) so as to become energized when the power plant switch is turned to "ON". The two make contacts of this relay are normally "open" and are connected in the tungar bulb plate circuits, so as to hold these circuits open until the relay is energized.

The relay is designed to be "slow acting", pulling up its armature about 1 or 2 seconds after the power plant switch is turned to "ON". This allows time for the tungar bulb filaments to become heated before the high voltage plate current is connected to the tungar bulbs. This heating of the tungar filaments prior to the striking of the arc between the tungar "plate" and the tungar "filament" prevents "stripping" the filament of active material, avoiding flashing in the bulb, and insuring continued full efficiency of bulb operation, regardless of the number of times of turning "on" of the power plant. Thus, no definite recuperation period is required between the times of turning "on" and "off" the No. 404 power plant.

Each relay outfit includes the following:

1 - P-17879 Relay and mounting assembly, including angle bracket and a 6-wire cable.

1 - P-17876 Spacer for the Power Plant "A" Capacitor Mounting.

4 - P-5644 Mounting Screws for the power plant "A" Capacitor. (Replace present screws which are not long enough when relay bracket and P-17876 Spacer are installed).

If P-17778 Equalizer Coil is not already installed on the No. 404 Power Plant, it is advisable to add this coil at the same time this relay is installed. See special instructions accompanying equalizer coil for installation.

The No. 2 Voltage Compensator can be used with this P-17778 Equalizer Coil and with this relay, when such voltage compensation is required. See special instructions accompanying No. 2 Compensator for installation.

Installing Instructions for Relay:

First, remove the No. 404 Power Plant from the receiver cabinet, then proceed as follows:

1 - Remove four mounting screws from the P-17119 "A" Capacitor Block (Located next to the binding post terminal rack at rear of No. 404 Power Plant).

2 - Insert relay cable wires down through the same rectangular opening in base of power plant that is used for the terminals of the P-17119 "A" Capacitor Block. Arrange all six wires so as to lay smooth and flat on the surface of the power plant base, with no cross-overs, when the "A" Capacitor Block is returned to its original position.

3 - Insert Relay Mounting Bracket under the right-hand end of the "A" Capacitor Block (looking from back of power plant) and the P-17876 Spacer under the left-hand end of the "A" Capacitor Block. This leaves a 1/8" spacing between the top of the power plant base and the "A" Capacitor Block for the 6 relay wires, providing these wires have been arranged as described in paragraph "2".

4 - Insert the new P-5644 Screws through the holes in the mounting lugs of the "A" Capacitor Block, being sure that these screws go through the holes in the relay mounting bracket and in the P-17876 Spacer. Replace the lock washers and nuts removed from the original "A" Capacitor Mounting Screws.

5 - Now arrange the relay cable so as to be adjacent to the power plant cable and so that the two "red" relay wires and the two "green" relay wires will terminate at the two tungar bulb socket terminals. It may be advisable to tie the relay cable wires to the power plant cable wires to give a secure fastening for the new cable.

6 - Connect and solder the bare end of the "long black" relay wire to the right-hand terminal (looking from the rear and at bottom of No. 404 Power Plant) of the R-2 Resistor, which is marked K-7850068 and has a resistance of 4182 ohms.

7 - Cut and remove the short "strap wire" that connects the right-hand terminals of the two resistors K-7850068 (4182 ohms) and K-7850067 (976 ohms) together. This disconnects the 976 ohm resistor from the power plant circuit.

8 - Connect and solder the bare end of the "short black" relay wire to the left-hand terminal of the K-7850067 Resistor (976 ohm).

9 - Disconnect (unsolder) the two "blue" wires from the long "plate" terminals of the tungar bulb sockets.

10 - Connect and solder the bare end of one of the "red" relay wires to the left-hand long tungar socket terminal.

11 - Connect and solder the bare end of one of the "green" relay wires to the right-hand long tungar socket terminal.

12 - Splice and solder the second "red" relay wire to the "long blue" power plant cable wire, that was previously removed from the left-hand tungar terminal.

13 - Splice and solder the second "green" relay wire to the "short blue" power plant cable wire, that was previously removed from the right-hand tungar terminal.

14 - Carefully insulate the bare wires where the two splices, paragraphs 12 and 13, are made. Use electricians tape, wrapping this tape so as to completely cover the bare portions of the wires at the splices and so that this tape will not unwrap or come off the joint when subject to heat.

15 - Replace power plant in radio receiver cabinet; re-connect cable and connecting cords at rear of power plant; insert all four rectifier bulbs; have switch set at "off", and then connect power supply cord to house lighting circuit.

(a) Now, when the switch is turned to "on", all four rectifier bulbs should light and the meter on the front panel of the receiver should indicate a reading near the "red mark" on the meter scale.

(b) Turn "meter adjusting" knob on radio receiver to bring pointer of the meter on to the red mark. It may be necessary to readjust this setting after the power plant has become fully warmed up.

(c) When the switch is turned to "ON", the relay armature should be pulled up and both sets of relay contacts should be closed. Care must be taken not to change the adjustment of the relay springs when installing this apparatus.

(d) When the switch is turned to "OFF", the relay armature should be released and both sets of relay contacts should be opened.

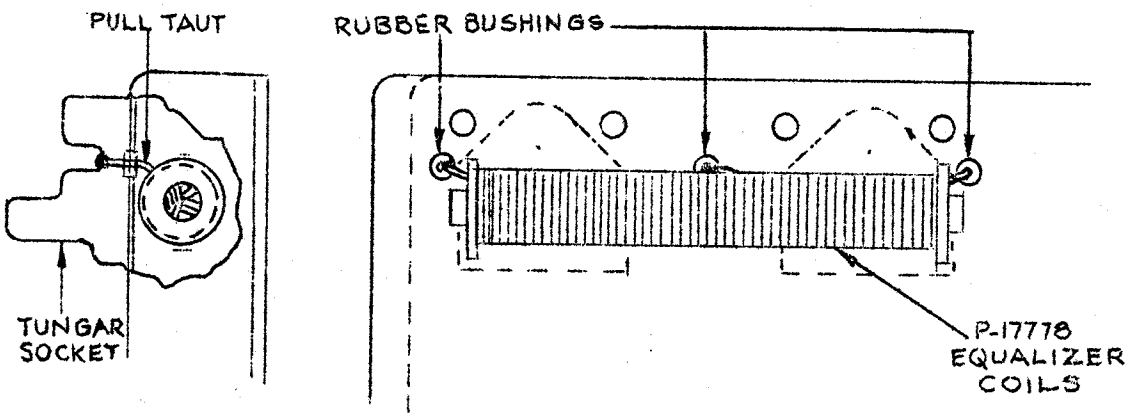
(e) There should be a slight (1 or 2 seconds) delayed action of the relay armature from the time the switch is turned "ON" until the relay contacts are closed.

(f) No attention or adjustment of this relay is required in service, provided it is not damaged in handling.

INSTRUCTIONS FOR INSTALLING STROMBERG-CARLSON P-17778 EQUALIZER COILS ON NO. 404 SOCKET-POWER UNITS

The addition of a P-17778 Equalizer Coil, which insures more even division of the load between the two Tungar Bulbs, will improve the No. 404 Socket-Power Unit to give more uniform action and longer life of the Tungar bulbs.

Unequal division of the load between the two Tungar bulbs may eventually result in paralyzing the overworked bulb, but this paralyzation is seldom permanent. After the load is evenly distributed by the P-17778 Equalizer Coil, such bulbs can generally be revived to full efficiency by operation under normal load for a period varying from 20 seconds to an hour.



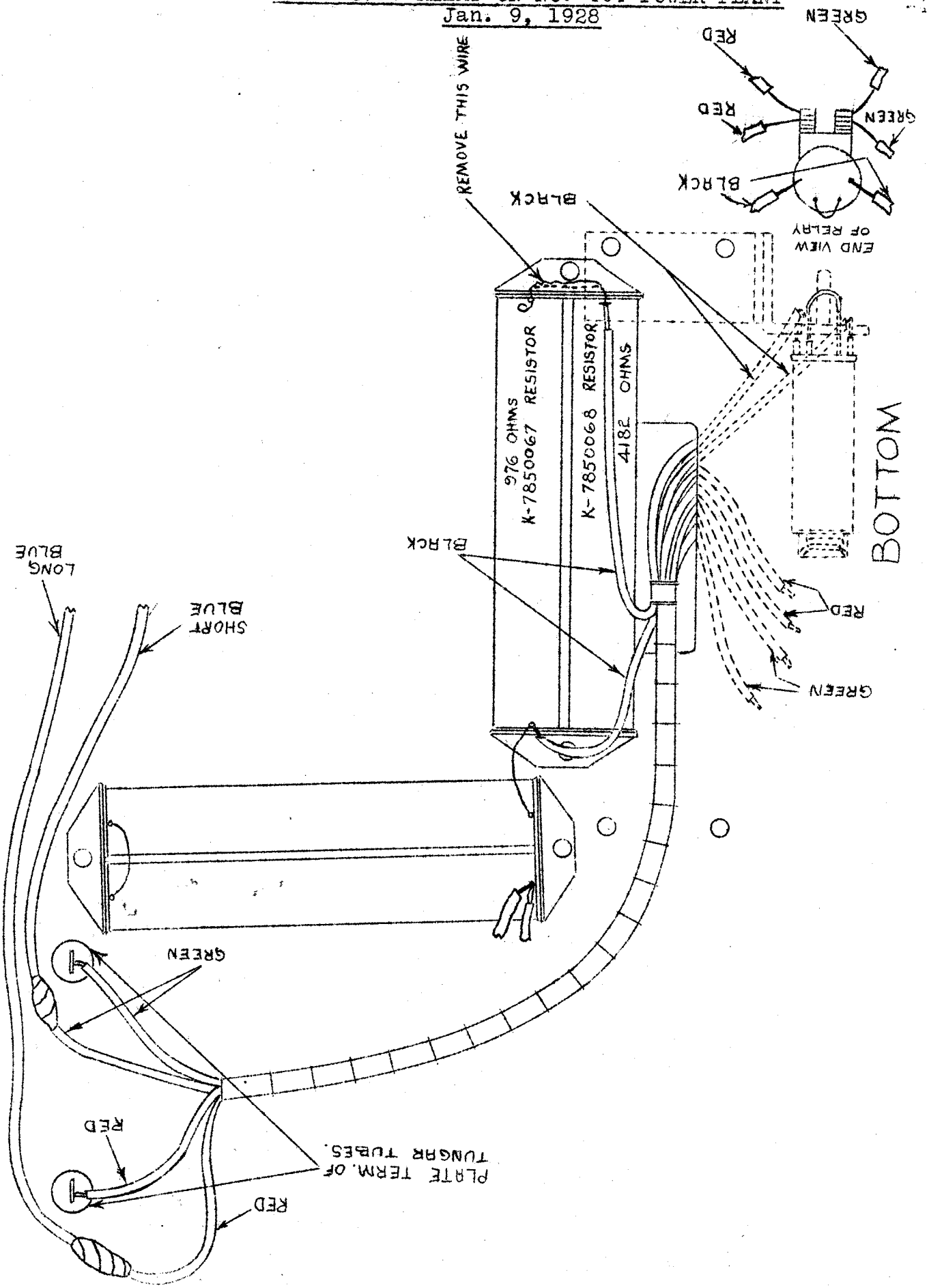
METHOD OF INSTALLATION

For an installation on the No. 734 Receiver, remove the Record-Radio key and draw the Socket-Power Unit forward until the front four or five inches project out of the cabinet. For an installation in the No. 744 model, the Socket-Power Unit should be entirely withdrawn from the cabinet through the opening at the rear.

Holding the Equalizer Coil underneath the base of the No. 404 Socket-Power Unit and in line with the Tungar sockets, pass the three wires from the coil up through the three rubber bushings set into the base to insulate the filament leads to the Tungar sockets. Draw the three wires from the coil taut, so that the coil is completely housed beneath the base. Make certain that these wires do not ground to the base. Solder the three coil leads to the filament terminals of the Tungar Sockets, but do not remove the other wires already soldered to these terminals.

INSTALLING RELAY ON NO. 404 POWER PLANT

Jan. 9, 1928



STROMBERG-CARLSON
INFORMATION FOR DEALERS' SERVICE MEN
INSTRUCTION NO. 21 RELEASED 3-1-28

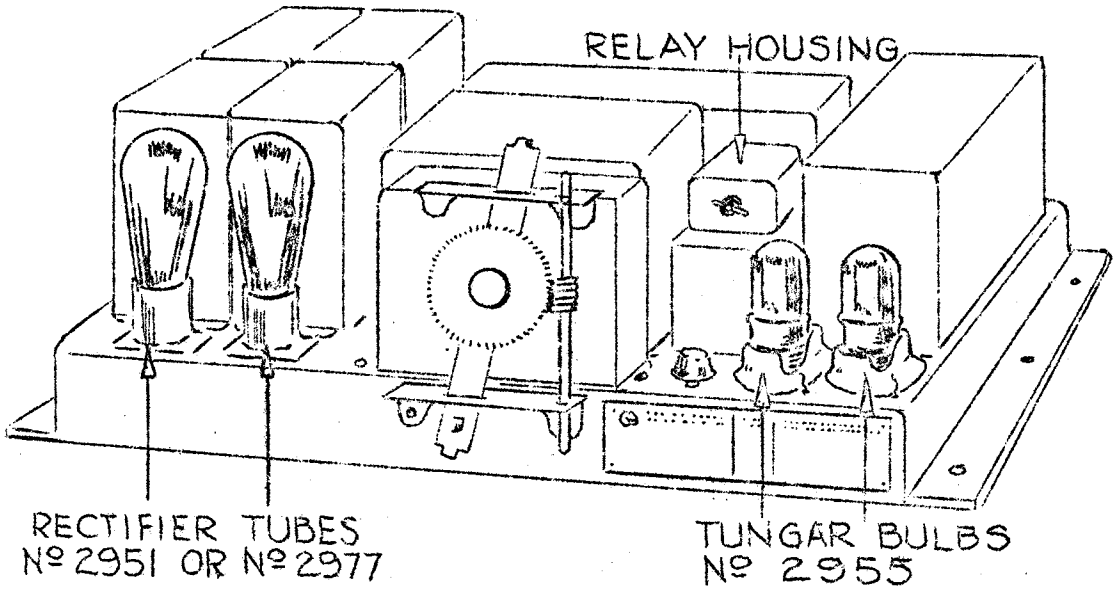
INSTALLATION AND OPERATION OF NO. 404-RA SOCKET-POWER UNITS

The No. 404-RA Socket-Power Unit should be installed and connected in the same way as the No. 404 or No. 404-R Unit which it replaces. The No. 2 Voltage Compensator (where used) must be dispensed with, as this "RA" type of No. 404 Socket-Power Unit is not designed to operate with an external voltage compensator. Where extreme voltage variations are encountered, a Potentiometer type of Volume Control should be provided in the receiver chassis, or if not so equipped, it should be installed as described in "Information for Dealers' Service Men, Instruction No. 22." This potentiometer volume control will give the equivalent result as regards maintaining a given volume when the line circuit voltage changes, as the external type voltage compensator.

At the same time that this No. 404-RA Socket-Power Unit is installed, the cabinet should be ventilated as described in "Information for Dealers' Service Men, Instruction No. 20."

In this No. 404-RA Unit, the location of the 0.6 ampere Tungar bulbs (No. 2955) and of the Rectifier tubes (No. 2951 or No. 2977) has been interchanged. The new arrangement is shown in the accompanying illustration. Also, two telephone relays enclosed in an aluminum shell are mounted on a bracket and located above the high voltage filter circuit reactors.

NO. 404-RA SOCKET-POWER UNIT



The purpose of these relays is to delay the application of the high operating voltage to the plates of the Tungar bulbs for at least one-half second after the switch is turned on. This allows the Tungar filaments to come up to full operating temperature before the Tungar arc forms, thereby preserving sensitivity and insuring long operating life to the bulbs.

> The normal operation is for one of these relays to "pull up" as soon as current flows in the output circuit of the high voltage rectifier tubes. When this first relay has pulled up it allows the second relay to pull up. Then the first relay "falls away" again, and in falling away it closes the circuit to the plates of the Tungar bulbs.

The two relays are adjusted at the factory to give a delay in closing the Tungar plate circuit slightly greater than one-half second, with the meter (milliammeter) pointer set at the right-hand edge of the red mark on the scale and with UX-216-B tubes (No. 2951) used for high voltage rectification. It is very important that this relay adjustment be maintained. Do not tamper with these relays. The delayed action will be even greater when UX-281 tubes (No. 2977) are employed for high voltage supply. The delay will be decreased by operating the receiver with the "Meter Adjuster" knob so adjusted that the Meter pointer is to the right (beyond) the red mark on the scale, and the delay increased by operating the receiver with the Meter pointer to the left (below) the red mark.

If the house lighting circuit voltage is low, and the Meter Adjuster set for a low Meter reading, the "B" circuit current may be so low that one or both relays will fail to operate. This condition will be shown by the Meter pointer remaining at "OFF" or "ZERO" position, when the receiver switch lever is thrown to its "ON" position. When this condition is encountered, immediately throw the switch to "OFF" position, so as to avoid any possible damage to the power plant or receiver chassis circuits.

Now, turn the "Meter Adjuster" knob counter-clockwise (looking down on top of knob) for the No. 744 Receiver, or clockwise (looking up) for the No. 734 Receiver, at least ten revolutions and again throw the switch lever to "ON". If the meter pointer again fails to operate, immediately turn "OFF" the receiver and turn the Knob in the same direction for about ten additional revolutions. After reaching a setting of the "Meter Adjuster", where the Meter pointer operates when the switch is thrown "ON", readjust this control, so that the pointer is on the "red" mark.

Instruct your customer to observe the Meter reading for a few days to determine at what time of day the line voltage is highest, and to turn the Meter Adjuster at such a time so that the pointer

never goes beyond the right-hand (high) edge of the red mark. Once that is done, your customer can disregard the "Meter Adjuster", unless some extraordinary change in house lighting circuit voltage causes the meter pointer to go beyond the red mark on the scale, or more than a division or two below the red mark.

With the new Potentiometer Volume Control, the "Meter Adjuster" will have little effect on volume and sensitivity, even though it be varied throughout its entire range. It is wise, however, to observe the Meter reading from time to time to make sure that it is not too high.

When an antenna wire is used on the No. 734 Receiver, or coupled to the loop of the No. 744 model, it is well not to depend on a short length so as to localize the "pick-up" too close to the receiving set and Socket-Power Unit. Best results are obtained when a long outdoor or indoor antenna is used, even though it may be necessary to insert a small series condenser (about 0.00025 mfd.) in series with the antenna and antenna binding post to reduce the wave-length of the antenna system when this long antenna is employed. If a picture molding antenna must be used, keep the lead-in wire away from the detector end of the cabinet, and put up thirty to forty feet of wire, running it as far away from the receiver as possible.

STROMBERG-CARLSON

INFORMATION FOR DEALERS' SERVICE MEN

INSTRUCTION NO. 22. RELEASED 3-1-28

POTENTIOMETER VOLUME CONTROL FOR NO. 734 AND NO. 744 RECEIVERS

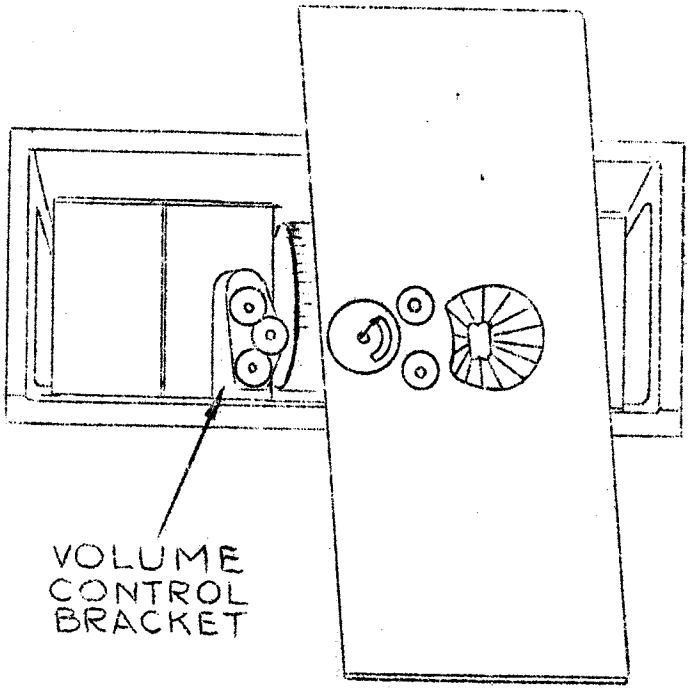
The accompanying volume control unit, consisting of a potentiometer mounted on a bracket and geared to a control shaft, is designed to mount in the same space as the two-rheostat type of volume control on No. 734 and No. 744 Radio Receivers now in the field. This potentiometer volume control avoids changes in loud speaker volume due to excessive line voltage variations which have heretofore required a No. 2 Voltage Compensator. Therefore, an external voltage compensator is not necessary and should not be used when this potentiometer volume control is installed and when the No. 404-RA Socket Power Unit is used.

TO INSTALL THE POTENTIOMETER VOLUME CONTROL

1. Draw the receiver chassis out of the cabinet and lay it on its back (i.e., with the panel on top) on the floor or on a bench.

2. Remove the two pull-knobs, the two control knobs, and the eight or ten hexagonal nuts that hold the panel to the chassis.

3. Raise the panel clear and, without disconnecting the meter connecting wires, revolve it 90 degrees clockwise to expose the volume control unit bracket, allowing the panel to rest on the chassis while the following operations are done.



NO. 734 CHASSIS SHOWING PANEL RESTING ON CHASSIS AND REVOLVED TO EXPOSE VOLUME CONTROL BRACKET AND ASSEMBLY

4. Remove the two screws that hold the volume control bracket to the base.

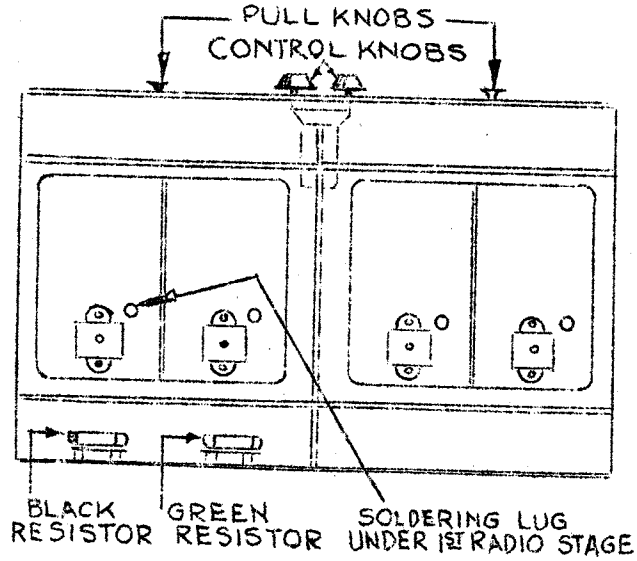
5. Cut away the blue-orange and the orange-white wires from their soldering lugs on the old volume control rheostats, but leave the black wire connected to its soldering lug. Disconnect this black wire, soldering lug and all, by removing the terminal screw which holds it to the 250-ohm rheostat.

6. Mount the new potentiometer volume control bracket on the chassis base, using the same screws removed from the old volume control bracket.

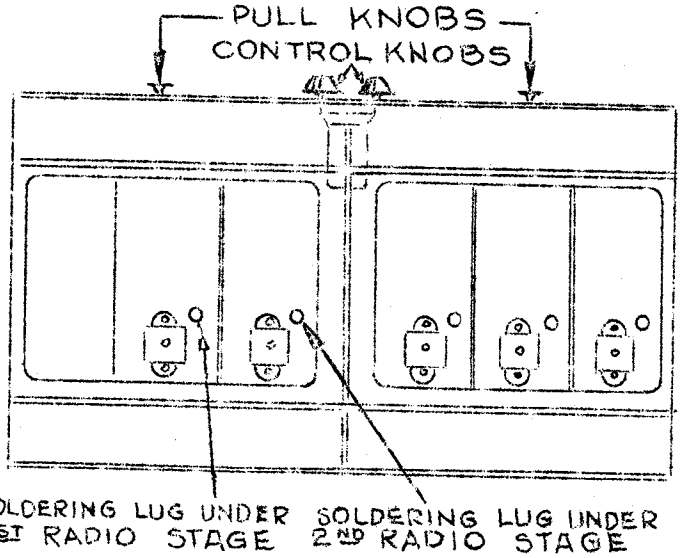
7. Connect the black wire to the new potentiometer by clamping its soldering lug under the one terminal nut of this new potentiometer which does not already have a wire and soldering lug connected to it.

(A red wire and a slate wire, supplied with the potentiometer volume control, hang free from its terminals at this point, while the black wire has just been connected to the third potentiometer terminal).

8. Draw the blue-orange and the orange-white wires (which have just been removed from the old rheostats) down underneath the base, cut off all but a short length of each, connect and solder these wires together, tape up the joint, and tie this joint to the cable where it will not be exposed to wear and abuse.



BOTTOM VIEW OF NO.734 CHASSIS



BOTTOM VIEW OF NO.744 CHASSIS

9 (a). If the Receiver is a No. 734 model, look underneath the base of the chassis and at the rear you will find two resistors mounted on grid leak mountings. One is a black resistor and the other a green one. Disregard the green resistor. Two slate-red wires are soldered to the terminals at each end of the black resistor. Of the two wires at one end of the black resistor, one projects from the shielded cable (cable with metal overall braiding) of wires that goes to the 2nd radio stage; the other slate-red wire passes up through a hole in the base to the coupling stage of the receiver. Do not disturb these latter wires - it is the two slate-red wires at the other end of the black resistor that we are interested in. Of the two slate-red wires with which we are concerned - both of which are tied into the laced cable of power wires, - unsolder one of them from the terminal of the black resistor. Now test this wire for continuity from the end which you just unsoldered to the B+90 volt spade terminal of the cable shoe. This is the terminal that is nearest the pin plug of the ABC supply cable. For testing, use a 4-1/2 volt "C" battery and a small buzzer or a headset or a vacuum tube filament. If no buzz or click or flash is obtained, re-solder this wire to the black resistor terminal and unsolder and test the other slate-red wire for continuity to the terminal on the cable shoe..

NOTE:- If no battery or continuity test indicator is at hand, you may be able to trace the two slate-red wires in the laced cable. The wire which goes to the soldering lug which projects through a hole in the bottom of the shielded compartment for the 1st tuned radio stage should remain soldered to the black resistor mounting. The wire which goes to B+90 volts should be disconnected from the resistor.

10 (a). Run the slate wire and the red wire from the new potentiometer volume control through the holes in the base and parallel to the laced cable of wires to the mounting of this black resistor. Tie these wires to the laced cable with string at short intervals for neatness.

11 (a). Solder the red potentiometer wire to the terminal of the black resistor from which you removed one slate-red wire.

12 (a). Connect and solder the slate potentiometer wire to the slate-red wire that you unsoldered from the black resistor terminal. Tape this joint and tie back to the cable for neatness and support.

9 (b). If the Receiver is a No. 744 model, remove one of the two slate-red wires that are soldered to the insulated lug projecting through a hole in the bottom of the shielded compartment for the 1st radio stage. Test for continuity to B+90 volts cable shoe terminal, as described above in paragraph 9 (a) for the No. 734 Receiver; or trace out these two slate-red wires in the laced cable and leave the

wire soldered to the lug under the 1st radio stage which connects it to a similar lug under the 2nd radio stage, but unsolder the other slate-red wire which connects the lug under the 1st radio stage to B+90 volts cable shoe terminal.

10 (b). Run the red wire and the slate wire from the potentiometer volume control through the cable holes in the base of the chassis, tying these wires to the cable at convenient intervals for neatness and support.

11 (b). Cut to correct length and solder the red wire to the terminal lug under the 1st radio stage.

12 (b). Cut the slate wire to correct length and connect and solder to the slate-red wire that you removed from the lug. Tape the joint and tie back the free length of spliced wire to the cable.

13. Replace front panel on chassis, fastening with all the nuts and the pull knobs removed in paragraph No. 2.

14. Replace the volume and selector control knobs, being sure that there is a space of about 1/16 inch left between the back of knobs and front of panel for freedom of movement.

IMPORTANT:- Be sure to return to our factory, the old volume control bracket with assembled rheostats and gear control for which we will issue credit.

STROMBERG-CARLSON

INFORMATION FOR DEALERS' SERVICE MEN

INSTRUCTION NO. 20 RELEASED 3-1-28

VENTILATING CABINETS OF NO. 734 AND NO. 744 RECEIVERS.

When a No. 404-RA Socket-Power Unit is installed in a No. 734 Receiver or a No. 744 Receiver to replace the No. 404 or No. 404-R unit formerly employed with these receivers, holes must be drilled in the receiver cabinets to provide additional ventilation.

The accompanying diagrams illustrate the proper location of centers for the ventilation holes. Holes are to be added in the back, bottom dust panel, and the shelf which supports the No. 404-RA Socket-Power Unit in a No. 744 Receiver cabinet. Holes are to be drilled in the back and the shelf which supports the unit in a No. 734 Receiver cabinet.

These holes should all be of 1½ inches diameter, although a 1¼ inch size is permissible if you have already obtained such a wood bit in accordance with Instructions No. 18 and 19 of "Information for Dealers' Service Men". If the 1¼ inch diameter bit is used, be sure to center the top row of holes to be drilled in the back of a No. 744 cabinet low enough to clear the under side of the partition inside the cabinet for the phonograph compartment.

Always use a wood bit with a good screw point when drilling a cabinet, and always observe one of the following two precautions to prevent splitting the wood or tearing loose the veneer:

(a) Drill from one surface of the wooden panel until the point of the bit just pierces the opposite surface. Do not exert much pressure on the brace when the point of the bit begins to pierce this surface. Now, if the location of the hole will permit, reverse your position and drill from the opposite side, with the point of the bit centered in the small hole it has pierced. The cutting edge of the bit will then score a circle in the uncut surface of the wood and prevent tearing at the edges of the hole.

(b) Clamp a block of scrap wood, or have some one hold it, to the surface toward which you are drilling. The block need not be clamped tightly because the screw point of the bit, when it comes through the cabinet woodwork, will draw the block toward the uncut surface, the block thereupon reinforcing the uncut surface of wood at the edges of the hole, preventing splintering around the edge of the hole. This method is not so satisfactory for veneered panels as the method described in the preceding paragraph (a).

Drilling Shelves of No. 734 Cabinet:

The drilling of the holes in the shelves of the No. 734 cabinets for increased ventilation is most easily done by drilling holes in the bottom dust-board and then drilling the shelf with a bit extension, as follows:

With the chassis and socket-power unit removed, tip the cabinet over onto its left-hand side or end (looking at front of cabinet). Care should be taken to protect the finish of the protruding edges of the side of the cabinet beading, legs, etc., with suitable padding material where it rests on the floor. Drill straight through the bottom dust-board of the cabinet and then through the shelf which supports the socket-power unit, using an extension bit holder. Be very careful to lay out the location of centers for these holes on the bottom dust-board, so that they will come in their proper places in the shelf, and drill straight.

> A 24-inch extension bit holder will be required for this method of drilling the No. 734 cabinet. The Miller Falls 24-inch bit extension No. 35 lists for $2.35, and the Stanley 24-inch extension bit holder No. 1 lists for $2.05.

Drilling Shelves of No. 744 Cabinet:

For cutting the additional holes in the bottom panel and the socket-power unit shelf, for increased ventilation of the No. 744 cabinet, tip the cabinet over on its left-hand end (looking at front of cabinet) and drill straight through both bottom dust-board and socket-power shelf with an extension bit. But first be sure to remove the chassis, socket-power unit, magnetic pick-up unit, phonograph needles and loose records. Protect the finish of both the top and bottom beadings of the cabinet with suitable padding material where these parts come in contact with the floor. Lay out the location of centers of the holes on the bottom dust-board.

With this No. 744 cabinet, there is the advantage that, after the holes are cut in the bottom dust-board, you can start the holes in the shelf with the edge of the bit bearing against the top of the housing for the phonograph record albums; this will help you to line up the holes in the shelf.

Finishing Edges of Drilled Holes:

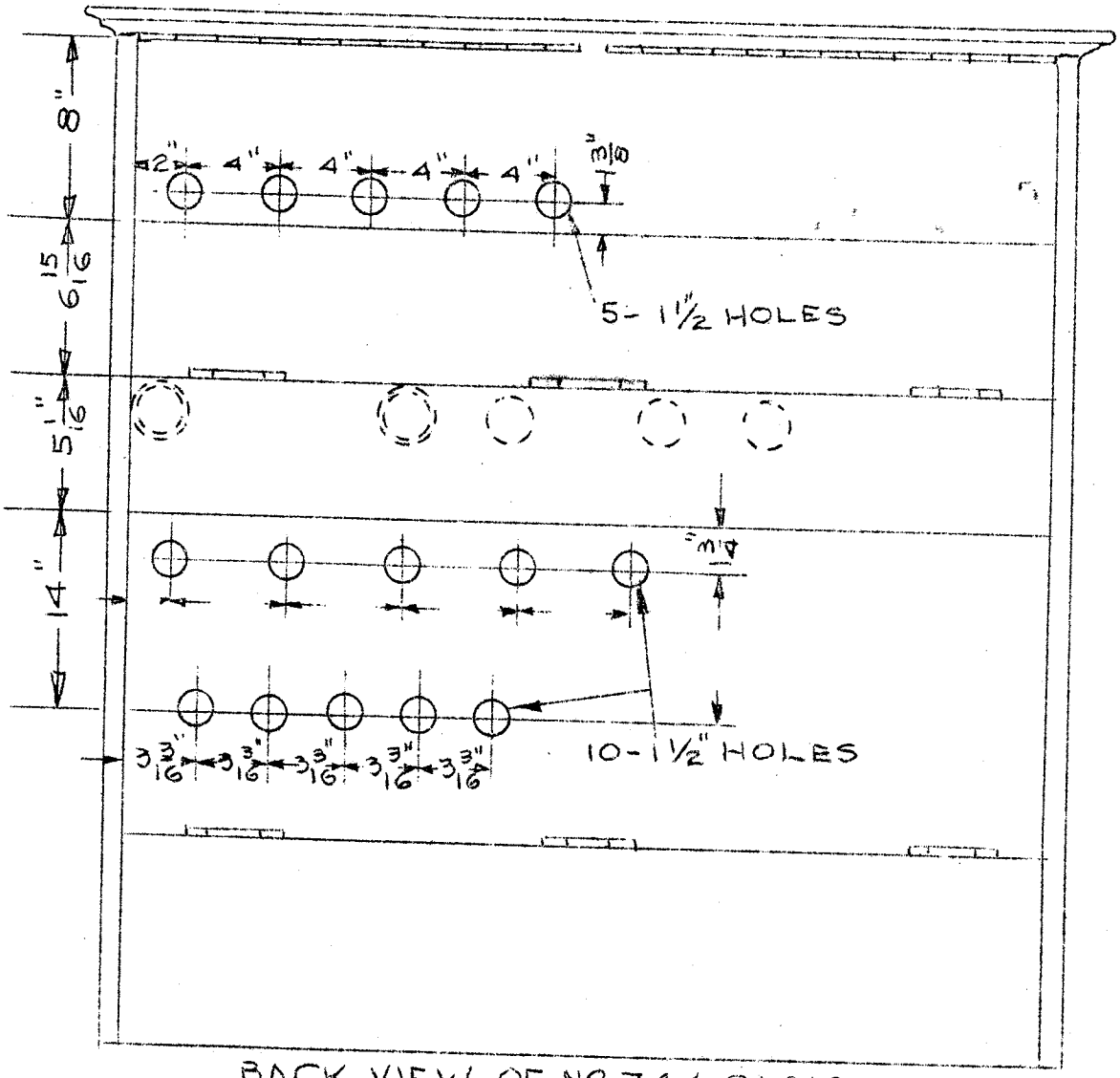
When the cabinet is drilled, stain the holes with Burnt Umber, which may be obtained in powder form from any store dealing in paint supplies. One ounce of this power should be sufficient for fifty cabinets. It should be mixed with a little water and may be applied with a brush, a finger, piece of cloth or piece of paper. Stains containing alcohol, spirits, or turpentine may be used, but in this case the excess solvent must be wiped off and the stain rubbed dry within a minute after it is applied. If this is not done, the excess spirits will spoil the finish of the cabinet around the holes.

Attach: 3 Pages of Diagrams.

STROMBERG-CARLSON

INFORMATION FOR DEALERS' SERVICE MEN

PAGE 1 OF 3 PAGES TO ACCOMPANY INSTRUCTION NO. 20



BACK VIEW OF Nº 744 RADIO REC. SHOWING LOCATION OF ADDED HOLES. DOTTED CIRCLES INDICATE HOLES ALREADY IN CABINET

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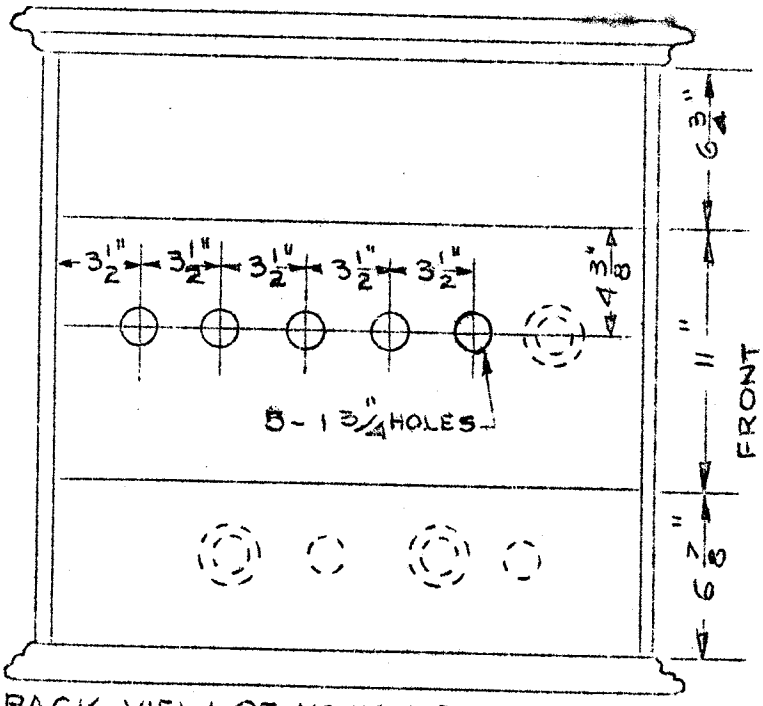
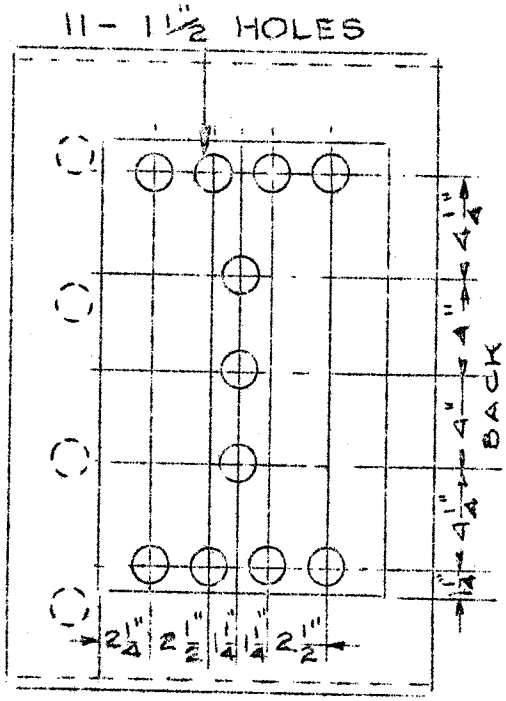
INFORMATION FOR DEALERS' SERVICE MEN

PAGE 2 OF 3 PAGES TO ACCOMPANY INSTRUCTION NO. 20



BACK VIEW OF No 734 RADIO REC. CABINET, SHOWING LOCATION OF VENTILATION HOLES. DOTTED CIRCLES INDICATE HOLES ALREADY IN CABINET



BOTTOM VIEW OF No 734 RADIO REC. CABINET SHOWING LOCATION OF ADDED VENTILATION HOLES TO BE DRILLED IN BOTTOM DUST BOARD, & SOCKET POWER UNIT SHELF. DOTTED CIRCLES INDICATE HOLES ALREADY DRILLED IN SHELF

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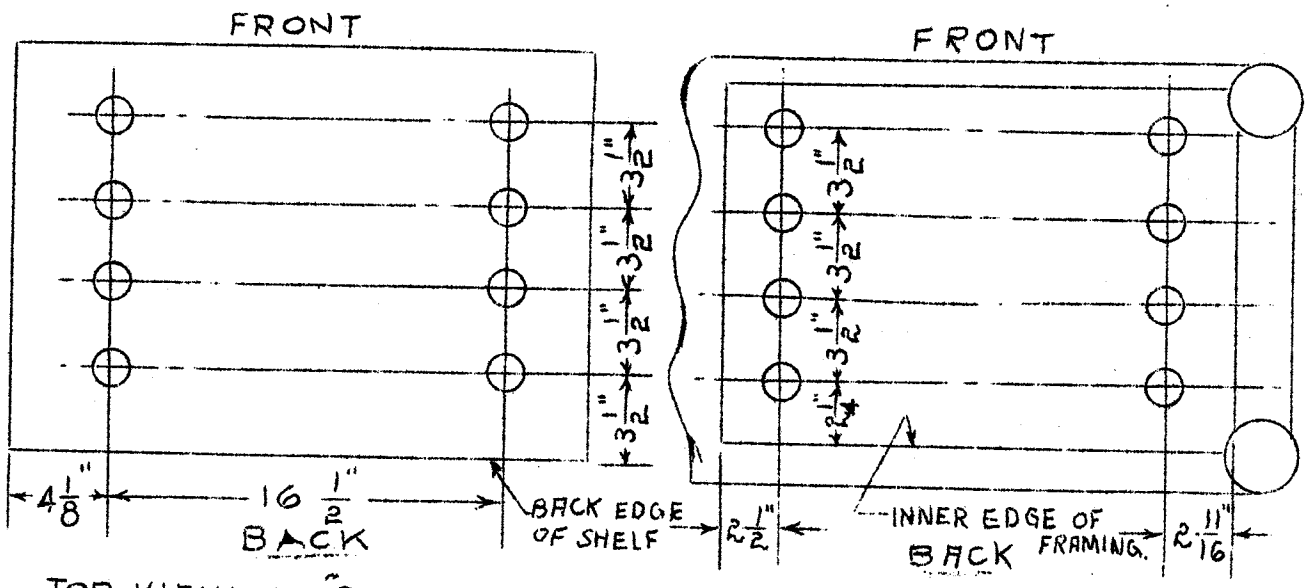
INFORMATION FOR DEALERS' SERVICE MEN

PAGE 3 OF 3 PAGES TO ACCOMPANY INSTRUCTION NO. 20



TOP VIEW OF "SOCKET POWER SHELF" IN Nº 744 RADIO REC. CABINET SHOWING LOCATION OF VENTILATION HOLES.

VIEW LOOKING AT BOTTOM OF Nº 744 RADIO REC. CABINET SHOWING ADDED VENTILATION HOLES.

SCALE 1½" TO 1"

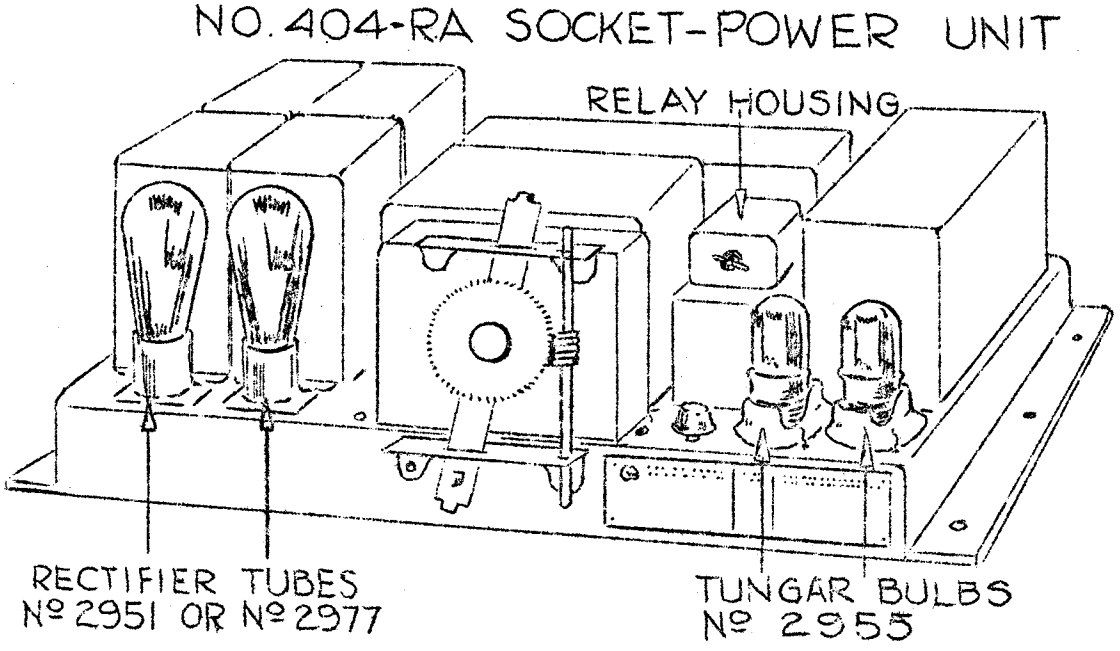
STROMBERG-CARLSON
INFORMATION FOR DEALERS' SERVICE MEN
INSTRUCTION NO. 21 RELEASED 3-1-28

INSTALLATION AND OPERATION OF NO. 404-RA SOCKET-POWER UNITS

The No. 404-RA Socket-Power Unit should be installed and connected in the same way as the No. 404 or No. 404-R Unit which it replaces. The No. 2 Voltage Compensator (where used) must be dispensed with, as this "RA" type of No. 404 Socket-Power Unit is not designed to operate with an external voltage compensator. Where extreme voltage variations are encountered, a Potentiometer type of Volume Control should be provided in the receiver chassis, or if not so equipped, it should be installed as described in "Information for Dealers' Service Men, Instruction No. 22." This potentiometer volume control will give the equivalent result as regards maintaining a given volume when the line circuit voltage changes, as the external type voltage compensator.

At the same time that this No. 404-RA Socket-Power Unit is installed, the cabinet should be ventilated as described in "Information for Dealers' Service Men, Instruction No. 20."

In this No. 404-RA Unit, the location of the 0.6 ampere Tungar bulbs (No. 2955) and of the Rectifier tubes (No. 2951 or No. 2977) has been interchanged. The new arrangement is shown in the accompanying illustration. Also, two telephone relays enclosed in an aluminum shell are mounted on a bracket and located above the high voltage filter circuit reactors.



The purpose of these relays is to delay the application of the high operating voltage to the plates of the Tungar bulbs for at least one-half second after the switch is turned on. This allows the Tungar filaments to come up to full operating temperature before the Tungar arc forms, thereby preserving sensitivity and insuring long operating life to the bulbs.

> The normal operation is for one of these relays to "pull up" as soon as current flows in the output circuit of the high voltage rectifier tubes. When this first relay has pulled up it allows the second relay to pull up. Then the first relay "falls away" again, and in falling away it closes the circuit to the plates of the Tungar bulbs.

The two relays are adjusted at the factory to give a delay in closing the Tungar plate circuit slightly greater than one-half second, with the meter (milliammeter) pointer set at the right-hand edge of the red mark on the scale and with UX-216-B tubes (No. 2951) used for high voltage rectification. It is very important that this relay adjustment be maintained. Do not tamper with these relays. The delayed action will be even greater when UX-281 tubes (No. 2977) are employed for high voltage supply. The delay will be decreased by operating the receiver with the "Meter Adjuster" knob so adjusted that the Meter pointer is to the right (beyond) the red mark on the scale, and the delay increased by operating the receiver with the Meter pointer to the left (below) the red mark.

If the house lighting circuit voltage is low, and the Meter Adjuster set for a low Meter reading, the "B" circuit current may be so low that one or both relays will fail to operate. This condition will be shown by the Meter pointer remaining at "OFF" or "ZERO" position, when the receiver switch lever is thrown to its "ON" position. When this condition is encountered, immediately throw the switch to "OFF" position, so as to avoid any possible damage to the power plant or receiver chassis circuits.

Now, turn the "Meter Adjuster" knob counter-clockwise (looking down on top of knob) for the No. 744 Receiver, or clockwise (looking up) for the No. 734 Receiver, at least ten revolutions and again throw the switch lever to "ON". If the meter pointer again fails to operate, immediately turn "OFF" the receiver and turn the Knob in the same direction for about ten additional revolutions. After reaching a setting of the "Meter Adjuster", where the Meter pointer operates when the switch is thrown "ON", readjust this control, so that the pointer is on the "red" mark.

Instruct your customer to observe the Meter reading for a few days to determine at what time of day the line voltage is highest, and to turn the Meter Adjuster at such a time so that the pointer

never goes beyond the right-hand (high) edge of the red mark. Once that is done, your customer can disregard the "Meter Adjuster", unless some extraordinary change in house lighting circuit voltage causes the meter pointer to go beyond the red mark on the scale, or more than a division or two below the red mark.

With the new Potentiometer Volume Control, the "Meter Adjuster" will have little effect on volume and sensitivity, even though it be varied throughout its entire range. It is wise, however, to observe the Meter reading from time to time to make sure that it is not too high.

When an antenna wire is used on the No. 734 Receiver, or coupled to the loop of the No. 744 model, it is well not to depend on a short length so as to localize the "pick-up" too close to the receiving set and Socket-Power Unit. Best results are obtained when a long outdoor or indoor antenna is used, even though it may be necessary to insert a small series condenser (about 0.00025 mfd.) in series with the antenna and antenna binding post to reduce the wave-length of the antenna system when this long antenna is employed. If a picture molding antenna must be used, keep the lead-in wire away from the detector end of the cabinet, and put up thirty to forty feet of wire, running it as far away from the receiver as possible.

STROMBERG-CARLSON

INFORMATION FOR DEALERS' SERVICE MEN

INSTRUCTION NO. 22. RELEASED 3-1-28

POTENTIOMETER VOLUME CONTROL FOR NO. 734 AND NO. 744 RECEIVERS

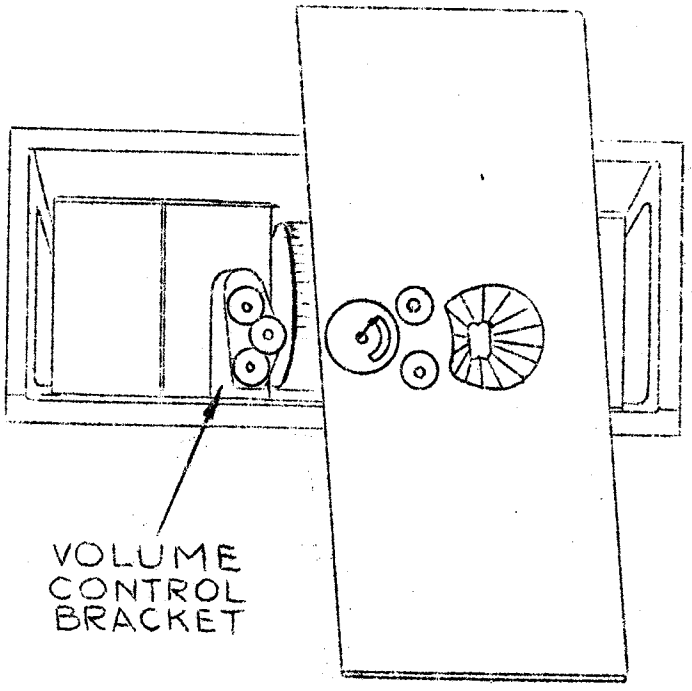
The accompanying volume control unit, consisting of a potentiometer mounted on a bracket and geared to a control shaft, is designed to mount in the same space as the two-rheostat type of volume control on No. 734 and No. 744 Radio Receivers now in the field. This potentiometer volume control avoids changes in loud speaker volume due to excessive line voltage variations which have heretofore required a No. 2 Voltage Compensator. Therefore, an external voltage compensator is not necessary and should not be used when this potentiometer volume control is installed and when the No. 404-RA Socket Power Unit is used.

TO INSTALL THE POTENTIOMETER VOLUME CONTROL

1. Draw the receiver chassis out of the cabinet and lay it on its back (i.e., with the panel on top) on the floor or on a bench.

2. Remove the two pull-knobs, the two control knobs, and the eight or ten hexagonal nuts that hold the panel to the chassis.

3. Raise the panel clear and, without disconnecting the meter connecting wires, revolve it 90 degrees clockwise to expose the volume control unit bracket, allowing the panel to rest on the chassis while the following operations are done.



NO. 734 CHASSIS SHOWING PANEL RESTING ON CHASSIS AND REVOLVED TO EXPOSE VOLUME CONTROL BRACKET AND ASSEMBLY

4. Remove the two screws that hold the volume control bracket to the base.

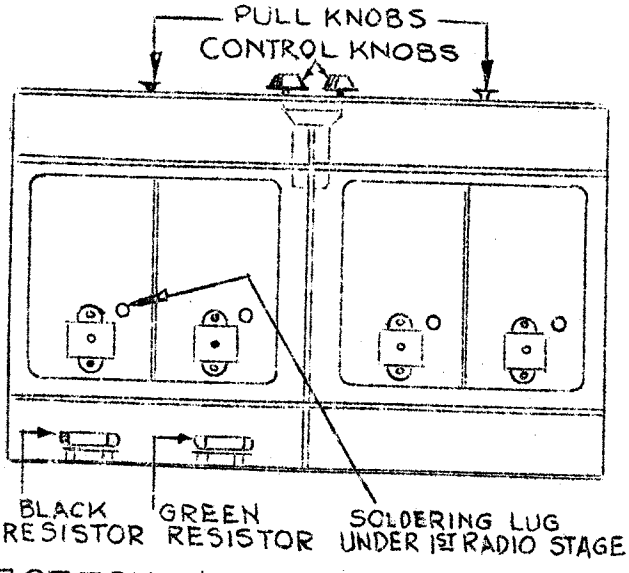
5. Cut away the blue-orange and the orange-white wires from their soldering lugs on the old volume control rheostats, but leave the black wire connected to its soldering lug. Disconnect this black wire, soldering lug and all, by removing the terminal screw which holds it to the 250-ohm rheostat.

6. Mount the new potentiometer volume control bracket on the chassis base, using the same screws removed from the old volume control bracket.

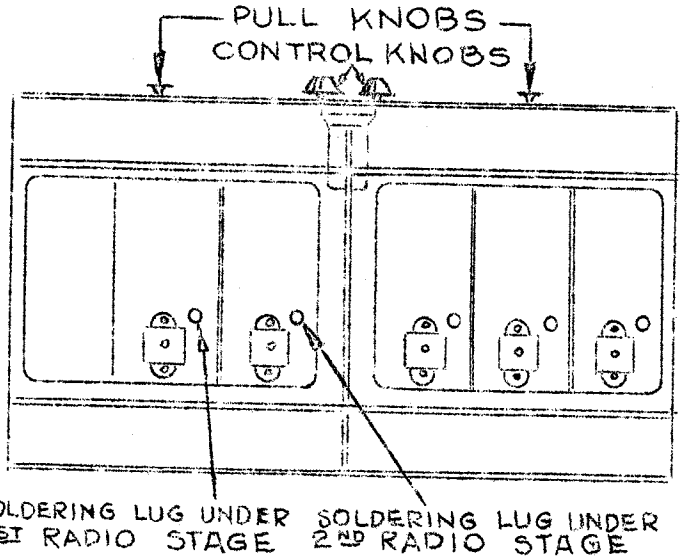
7. Connect the black wire to the new potentiometer by clamping its soldering lug under the one terminal nut of this new potentiometer which does not already have a wire and soldering lug connected to it.

(A red wire and a slate wire, supplied with the potentiometer volume control, hang free from its terminals at this point, while the black wire has just been connected to the third potentiometer terminal).

8. Draw the blue-orange and the orange-white wires (which have just been removed from the old rheostats) down underneath the base, cut off all but a short length of each, connect and solder these wires together, tape up the joint, and tie this joint to the cable where it will not be exposed to wear and abuse.



BOTTOM VIEW OF NO.734 CHASSIS



BOTTOM VIEW OF NO.744 CHASSIS

9 (a). If the Receiver is a No. 734 model, look underneath the base of the chassis and at the rear you will find two resistors mounted on grid leak mountings. One is a black resistor and the other a green one. Disregard the green resistor. Two slate-red wires are soldered to the terminals at each end of the black resistor. Of the two wires at one end of the black resistor, one projects from the shielded cable (cable with metal overall traiding) of wires that goes to the 2nd radio stage; the other slate-red wire passes up through a hole in the base to the coupling stage of the receiver. Do not disturb these latter wires - it is the two slate-red wires at the other end of the black resistor that we are interested in. Of the two slate-red wires with which we are concerned - both of which are tied into the laced cable of power wires, - unsolder one of them from the terminal of the black resistor. Now test this wire for continuity from the end which you just unsoldered to the B+90 volt spade terminal of the cable shoe. This is the terminal that is nearest the pin plug of the ABC supply cable. For testing, use a 4-1/2 volt "C" battery and a small buzzer or a headset or a vacuum tube filament. If no buzz or click or flash is obtained, re-solder this wire to the black resistor terminal and unsolder and test the other slate-red wire for continuity to the terminal on the cable shoe..

NOTE:- If no battery or continuity test indicator is at hand, you may be able to trace the two slate-red wires in the laced cable. The wire which goes to the soldering lug which projects through a hole in the bottom of the shielded compartment for the 1st tuned radio stage should remain soldered to the black resistor mounting. The wire which goes to B+90 volts should be disconnected from the resistor.

10 (a). Run the slate wire and the red wire from the new potentiometer volume control through the holes in the base and parallel to the laced cable of wires to the mounting of this black resistor. Tie these wires to the laced cable with string at short intervals for neatness.

11 (a). Solder the red potentiometer wire to the terminal of the black resistor from which you removed one slate-red wire.

12 (a). Connect and solder the slate potentiometer wire to the slate-red wire that you unsoldered from the black resistor terminal. Tape this joint and tie back to the cable for neatness and support.

9 (b). If the Receiver is a No. 744 model, remove one of the two slate-red wires that are soldered to the insulated lug projecting through a hole in the bottom of the shielded compartment for the 1st radio stage. Test for continuity to B+90 volts cable shoe terminal, as described above in paragraph 9 (a) for the No. 734 Receiver; or trace out these two slate-red wires in the laced cable and leave the

wire soldered to the lug under the 1st radio stage which connects it to a similar lug under the 2nd radio stage, but unsolder the other slate-red wire which connects the lug under the 1st radio stage to B+90 volts cable shoe terminal.

10 (b). Run the red wire and the slate wire from the potentiometer volume control through the cable holes in the base of the chassis, tying these wires to the cable at convenient intervals for neatness and support.

11 (b). Cut to correct length and solder the red wire to the terminal lug under the 1st radio stage.

12 (b). Cut the slate wire to correct length and connect and solder to the slate-red wire that you removed from the lug. Tape the joint and tie back the free length of spliced wire to the cable.

13. Replace front panel on chassis, fastening with all the nuts and the pull knobs removed in paragraph No. 2.

14. Replace the volume and selector control knobs, being sure that there is a space of about 1/16 inch left between the back of knobs and front of panel for freedom of movement.

IMPORTANT:- Be sure to return to our factory, the old volume control bracket with assembled rheostats and gear control for which we will issue credit.